Tracking No. 17010214

CONTRACT DOCUMENTS

C I T Y O F L I N C O L N/LANCASTER COUNTY
N E B R A S K A

Annual Supply
Turf Fertilizers and Chemicals
Bid No. 17-007

Crop Production Services, Inc
5320 Airport Road
Spearfish, SD 57783
(605) 642-3800

CITY OF LINCOLN/LANCASTER COUNTY, NEBRASKA
CONTRACT TERMS

THIS CONTRACT, made and entered into by and between **Crop Production Services, Inc, 5320 Airport Road, Spearfish, SD 57783**, hereinafter called "Contractor", and the City of Lincoln, Nebraska, a municipal corporation, and the County of Lancaster, Nebraska, a political subdivision of the State of Nebraska, hereinafter called the "Owners".

WHEREAS, the Owner has caused to be prepared, in accordance with law, Specifications, Plans, and other Contract Documents for the Work herein described, and has approved and adopted said documents and has caused to be published an advertisement for and in connection with said Work, to-wit:

Turf Fertilizers and Chemicals, Bid No. 17-007

and,

WHEREAS, the Contractor, in response to such advertisement, has submitted to the Owners, in the manner and at the time specified, a sealed Proposal/Supplier Response in accordance with the terms of said advertisement; and,

WHEREAS, the Owners, in the manner prescribed by law has publicly opened, read aloud, examined, and canvassed the Proposals/Supplier Responses submitted in response to such advertisement, and as a result of such canvass has determined and declared the Contractor to be the lowest responsible bidder for the said Work for the sum or sums named in the Contractor's Proposal/Supplier Responses, a copy thereof being attached to and made a part of this Contract;

NOW, THEREFORE, in consideration of the sums to be paid to the Contractor and the mutual covenants herein contained, the Contractor and the Owners have agreed and hereby agree as follows:

1. The Contractor agrees to (a) furnish all tools, equipment, supplies, superintendence, transportation, and other accessories, services, and facilities; (b) furnish all materials, supplies, and equipment specified to be incorporated into and form a permanent part of the complete work; (c) provide and perform all necessary labor in a substantial and workmanlike manner and in accordance with the provisions of the Contract Documents; and (d) execute and complete all Work included in and covered by the Owners' award of this Contract to the Contractor, such award being based on the acceptance by the Owner of the Contractor's Proposal, or part thereof, as follows:

   Agreement to Line Items 44 & 46-48 of Contractor's Proposal

2. The Owners agree to pay to the Contractor for the performance of the Work embraced in this Contract, the Contractor agrees to accept as full compensation therefore, the following sums and prices for all Work covered by and included in the Contract award and designated above, payment thereof to be made in the manner provided by the Owners:

   The Owners will pay for products/service, according to the Line Item pricing as listed in Contractors Proposal/Supplier Response, a copy thereof being attached to and made a part of this Contract. The Owners shall order on an as- needed basis for the duration of the contract. The cost of products or services for County agencies shall not exceed $4,045.00 during the contract term without approval by the Board of Commissioners. The cost of products or services for City Departments shall not exceed $33,480.00 during the contract term without approval.

3. Equal Employment Opportunity. In connection with the carrying out of this project, the contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, disability, age or marital status. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, ancestry, disability, age or marital status. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other compensation; and selection for training, including apprenticeship.

4. E-Verify. In accordance with Neb. Rev. Stat. 4-108 through 4-114, the contractor agrees to register with and use a federal immigration verification system, to determine the work eligibility status of new employees performing services within the state of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324 a, otherwise known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of a newly hired employee pursuant to the Immigration Reform and Control Act of 1986. The Contractor shall not discriminate against any employee or applicant for employment to be employed in the performance of this section pursuant to the requirements of state law and 8 U.S.C.A 1324b. The contractor shall require any subcontractor to comply with the provisions of this section.

5. Termination. This Contract may be terminated by the following:
   - 5.1) Termination for Convenience. Either party may terminate this Contract upon thirty (30) days written notice to the other party for any reason without penalty.
   - 5.2) Termination for Cause. The Owners may terminate the Contract for cause if the Contractor:
     - 5.2.1) Refuses or fails to supply the proper labor, materials and equipment necessary to provide services and/or commodities.
     - 5.2.2) Disregards Federal, State or local laws, ordinances, regulations, resolutions or orders.
     - 5.2.3) Otherwise commits a substantial breach or default of any provision of the Contract Document. In the event of a substantial breach or default the Owners will provide the Contractor written notice of said breach or default and allow the Contractor ten (10) days from the date of the written notice to cure such breach or default. If said breach or default is not cured within ten (10) days from the date of notice, then the contract shall terminate.

6. Independent Contractor. It is the express intent of the parties that this contract shall not create an employer-employee relationship. Employees of the Contractor shall not be deemed to be employees of the Owners and employees of the Owners shall not be deemed to be employees of the Contractor. The Contractor and the Owners shall be responsible to their respective employees for all salary and benefits. Neither the Contractor's employees nor the Owners' employees shall be entitled to any salary, wages, or benefits from the other party, including but not limited to overtime, vacation, retirement benefits, workers' compensation, sick leave or injury leave. Contractor shall also be responsible for maintaining workers' compensation insurance, unemployment insurance for its employees, and for payment of all federal, state, local and any other payroll taxes with respect to its employees' compensation.

7. Owner Inclusion. It is understood and agreed by all parties that "Owner/s" shall include the City of Lincoln and Lancaster County, Nebraska. Whenever in the Contract documents, including the instructions to bidders, specifications, insurance requirements, bonds, and terms and conditions or any other documents which are a part of the Contract, a singular entity is referenced (i.e., "the City" or "the County") it shall mean the "Owners" encompassing the City of Lincoln, and Lancaster County.

8. Period of Performance. This Contract shall be effective upon execution by all parties. The term of the Contract shall be a one (1) year term.

9. The Contract Documents comprise the Contract, and consist of the following:
   1. Contract Terms
   2. Accepted Proposal/Supplier Response
   3. Addendums 1 & 2
   4. Special Provisions
   5. Specifications
   6. Instructions to Bidders
   7. Notice to Bidders
   8. Sales Tax Exemption Form 13
      (Note: This form cannot be used for the WATER Division of the City of Lincoln. The WATER Division is taxable per Reg. 066.14A or applicable laws.)

The herein above mentioned Contract Documents form this Contract and are a part of the Contract as if hereto attached. Said documents which are not attached to this document may be viewed at: lincoln.ne.gov - Keyword: Bid - Awarded or Closed bids.

The Contractor and the Owners hereby agree that all the terms and conditions of this Contract shall be binding upon themselves, and their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

IN WITNESS WHEREOF, the Contractor and the Owners do hereby execute this contract upon completion of signatures on:

Vendor Signature Page
City of Lincoln Signature Page
Lancaster County Signature Page

Vendor Signature Page

CONTRACT
Annual Supply
Turf Fertilizers and Chemicals
Bid No. 17-007
City of Lincoln and Lancaster County
Crop Production Services, Inc

EXECUTION BY CONTRACTOR

IF A CORPORATION:

Attest:

_____ Seal
Secretary

Crop Production Services, Inc.
Name of Corporation

5320 Airport Road, Spearfish, SD 57783
Address

By: _____ - Tim Smith
Duly Authorized Official

Region Manager
Legal Title of Official

IF OTHER TYPE OF ORGANIZATION:

_____
Name of Organization

_____
Type of Organization

_____
Address

By: _____
Member

By: _____
Member

IF AN INDIVIDUAL:

_____
Name

_____
Address

_____
Signature

City of Lincoln Signature Page

CONTRACT
Annual Supply
Turf Fertilizers and Chemicals
Bid No. 17-007
City of Lincoln and Lancaster County
Crop Production Services, Inc

EXECUTION BY THE CITY OF LINCOLN, NEBRASKA

ATTEST:

Teresa J. Meier

City Clerk

CITY OF LINCOLN · FOUNDED JULY 29, 1867 · SEAL · INCORPORATED APRIL 1, 1869 · LANCASTER COUNTY, NEBRASKA

CITY OF LINCOLN, NEBRASKA

Chris Beutler, Mayor

Approved by Executive Order No. 090399

dated 2-23-17

Lancaster County Signature Page

CONTRACT
Annual Supply
Turf Fertilizers and Chemicals
Bid No. 17-007
City of Lincoln and Lancaster County
Crop Production Services, Inc

EXECUTION BY LANCASTER COUNTY, NEBRASKA

Contract Approved as to Form:

_____
Deputy Lancaster County Attorney

The Board of County Commissioners of Lancaster, Nebraska

_____

_____

_____

_____

_____

dated _____

City of Lincoln/Lancaster County (Lincoln Purchasing)
Supplier Response

Bid Information

Bid Creator	Rachelle Hinze, Buyer
Email	rhinze@lincoln.ne.gov
Phone	1 (402) 441-8313
Fax	1 (402) 441-6513
Bid Number	17-007 Addendum 2
Title	Annual Supply of Turf Fertilizers and Chemicals
Bid Type	Bid
Issue Date	12/22/2016 03:46 PM (CT)
Close Date	1/11/2017 12:00:00 PM (CT)

Contact Information

Address	Purchasing 440 S. 8th St. Lincoln, NE 68508
Contact	Rachelle Hinze, Buyer
Department	
Building	Suite 200
Floor/Room	
Telephone	1 (402) 441-8313
Fax	1 (402) 441-6513
Email	rhinze@lincoln.ne.gov

Ship to Information

Address
Contact
Department
Building
Floor/Room
Telephone
Fax
Email

Supplier Information

Company	Crop Production Services, Inc
Address	5320 Airport Road Spearfish, SD 57783
Contact	Bill Walker
Department	
Building	
Floor/Room	
Telephone	(605) 642-3800
Fax	(605) 642-3784
Email	william.walker@cpsagu.com
Submitted	1/5/2017 05:41:27 PM (CT)
Total	$53,774.26

By submitting your response, you certify that you are authorized to represent and bind your company.

Signature William Walker Email william.walker@cpsagu.com

Supplier Notes

All terms are 30 days from invoice date:

All pricing is delivered to your requested location(s) as needed or requested

Bid Notes

Bid Activities

Bid Messages

Bid Attributes
Please review the following and respond where necessary

#	Name	Note	Response
1	U.S. Citizenship Attestation	Is your company legally considered an Individual or Sole Proprietor: YES or NO As a Vendor who is legally considered an Individual or a Sole Proprietor I hereby understand and agree to comply with the requirements of the United States Citizenship Attestation Form, available at: http://www.sos.ne.gov/business/notary/citizenforminfo.html All awarded Vendors who are legally considered an Individual or a Sole Proprietor must complete the form and submit it with contract documents at time of execution. If a Vendor indicates on such attestation form that he or she is a qualified alien, the Vendor agrees to provide the US Citizenship and Immigration Services documentation required to verify the Vendor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program. Vendor further understands and agrees that lawful presence in the United States is required and the Vendor may be disqualified or the Contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. 4-108.	NO
2	Bid Documents	I acknowledge and accept that it is my responsibility as a Bidder to promptly notify the Purchasing Department Staff prior to the close of the bid of any ambiguity, inconsistency or error which I may discover upon examination of the bid documents including, but not limited to the Specifications.	Yes
3	Instructions to Bidders	I acknowledge reading and understanding the Instructions to Bidders.	Yes
4	Insurance Requirements	I acknowledge reading and understanding the Insurance Requirements.	Yes
5	Specifications	I acknowledge reading and understanding the specifications.	Yes
6	Alternate Products	I acknowledge if bidding an alternate product I have attached in the suppliers response section the information listed in section 2.4.	Yes
7	Quantities	I acknowledge that the quantity listed for each line item are an estimated yearly amount. The City does not guarantee any dollar amount or order quantities for the term of the contract.	Y
8	Bid award	a) I acknowledge and understand that the City, County and/or Public Building Commission reserves the right to award bids item-by-item, with or without alternates/options, by groups, or "lump sum" such as shall best serve the requirements and interests of the City, County and/or Public Building Commission. Do you agree and understand? Yes/No _____ b) Is your pricing based on an all-or-nothing basis, please indicate if so. _____	Yes

9	Special Delivery Requirements	I acknowledge reading and understanding the Special Delivery Requirements in the bid specifications.	Yes
10	Sample Contract	I acknowledge reading and understanding the sample contract.	Yes
12	Purchase Order, Contract and Delivery Contact	The City/County Purchasing Department issues Purchase Orders and Contracts via email to a designated contact person of the awarded Vendor. This designee will be the primary contact with the department through the delivery of the product/services. Please list the name, email address and phone number of the person who will be the contact person for the PO to be awarded.	William"Bill" Walker - william.walker@cpsagu.com -1-605-645-1636 Cell#, 1-866-642-3800 Toll Free Office
13	Delivery	State number of delivery days ARO. FOB to the City/County at the location specified with all transportation charges paid.	3 to 4 days from order reciept
14	Contact	Name of person submitting this bid:	William Walker
15	Electronic Signature	Please check here for your electronic signature.	Yes
16	Agreement to Addendum No. 1	Respondent hereby certifies that the change set forth in this addendum has been incorporated in their proposal and is part of their bid. Reason: See Bid Attachments section for Addendum information.	Yes
17	Agreement to Addendum No. 2	Respondent hereby certifies that the change set forth in this addendum has been incorporated in their proposal and is part of their bid. Reason: See Bid Attachments section for Addendum information.	Yes

Line Items

#	Qty	UOM	Description	Response
1	125	Gallons	Quali Pro 3-D Herbicide Active Ingredients: 2, 4-D - 30.56%, Dicamba - 2.77%, Mecoprop-p - 8.17%	No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product.	

#	Qty	UOM	Description	Response
2	12	Gallons	Quali Pro T Nex 1 AQ Growth Regulator Active Ingredient; Trinexapac-ethyl - 11.3%	No Bid

Item Notes: Unit price is per gallon. Preferred size is 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product.	

#	Qty	UOM	Description	Response
3	17	Gallons	PAC 223 (Turf Enhancer) Active Ingredient; Paclobutrozol - 22.3%	No Bid

Item Notes: Unit price is per gallon. Preferred size is 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

#	Qty	UOM	Description	Response
4	25	Gallons	Quali Pro Ethephon 2 SL Growth Regulator Active Ingredient; Ethepon - 21.7%	No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

#	Qty	UOM	Description	Response
5	192	Ounces	QuickSilver Herbicide Active Ingredient; Carfentrazone-ethyl - 21.3%	No Bid

Item Notes: Unit price is per ounce. Preferred size is 8 oz. bottle

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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6 2,000 Ounces Dimension Ultra 40WP NO SUBSTITUTES WILL BE ACCEPTED Active Ingredient; Dithiopyr - 40% No Bid

Item Notes: Unit price is per ounce. Preferred size is 8 x 5 ounces

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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7 120 Pounds QualiPro Prodiamine 65 WDG Herbicide Active Ingredient; Prodiamine - 65% $9.20

Item Notes: Unit price is per pound. Preferred size is 5lb

Supplier Notes: Price bid is per pound in 5 lb. containers

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: Resolute Herbicide - Manufactured by: Syngenta - Package Size: 5 lb. containers - EPA Reg #100-834

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8 50 Gallons Speedzone Herbicide Active Ingredients; 2, 4-D - 28.57%, Dicamba - 1.71%, Mecoprop-p acid - 5.88%, Carfentrazone-ethyl - .62% $68.10

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes: Price bid is per gallon, packaged in 2.5 gallon containers

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand	Product bid is: Speedzone Herbicide as requested - 2.5 gallon containers - Manufacturer: PBI Gordon Company - EPA Reg #2217-833

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9 104 Gallons Ranger Pro Herbicide Active Ingredients; Glyphosate - 41% Other, including surfactant 59% $11.80

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes: Price bid is per gallon product, packaged in 2.5 gallon containers

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: Makaze Herbicide - Manufactured by: Loveland Products - Package Size is: 2.5 gallon

containers - EPA Reg #34704-890

10 225 Pounds Alligare Mojave 70 EG Herbicide Active Ingredients: Diuron - 62.22%, Imazapry - 7.78% $8.40

Item Notes: Unit price is per pound. Preferred size is 5 lb. Bag

Supplier Notes: Price bid is per pound, packaged in 10 pound bags only

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product Bid is: Imazuron Herbicide - Manufactured by: NuFarm - Package Size is 10 lb. bags - EPA Reg #228-654

11 448 Ounces Defendor Herbicide by Dow Active Ingredient: Florasulam, 4.8% No Bid

Item Notes: Unit price is per ounce. Preferred size is 32 oz.

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Size and Brand	List your package sizes and brand of product	

12 15 Gallons Secure Fungicide Active Ingredient; Fluazinam - 40% No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

13 638 Ounces Velista Fungicide Active Ingredient: Penthiopyrad, 50% No Bid

Item Notes: Unit price is per ounce. Preferred size is 22 oz.

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product you are bidding.	

14 5 Gallons Insignia 2 SC Intrinsic Fungicide Active Ingredient: Pyraclostrobin, 23.3% No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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15 13 Gallons Quali-Pro Propiconazole 14.3 Fungicide Active Ingredient; Propiconazole - 14.3% No Bid

Item Notes: Unit price is per gallon. Preferred size is 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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16 5 Gallons Tartan Fungicide with Stressgard Active ingredients: Trifloxystrobin, 4.17% Triadimefon, 20.86% No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Pacage Sizes and Brand	List your package sizes and brand of product	

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17 108 Pounds Honor Intrinsic Fungicide Active Ingredients; Pyraclostrobin - 16.8%, Boscalid - 11.2% No Bid

Item Notes: Unit price is per pound. Preferred size is 36lb.

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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18 16 Gallons QualiPro Tebucaonzole 3.6F Fungicide Active Ingredient: Tebuconazole - 38.70% No Bid

Item Notes: Unit price is per gallon. Preferred size is 4 x 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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19 24 Gallons Bumper ES Fungicide Active Ingredient; Propiconazole - 41% No Bid

Item Notes: Unit price is per gallon. Preferred size is 4 x 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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20 65 Gallons Daconil Action Fungicide NO SUBSTITUTES WILL BE ACCEPTED Active Ingredient; Chlorothalonil - 53.94%, Acibenzolar-S-methyl - .11% No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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21 19 Pounds Heritage Action Fungicide NO SUBSTITUTES WILL BE ACCEPTED Active Ingredient; Azoxystrobin - 50%, Acibenzolar-S-Methyl, 1.18% No Bid

Item Notes: Unit price is per Pounds. Preferred size is 1 Pound

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Pacage Sizes and Brand	List your package sizes and brand of product	

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22 8 Gallons Quali-Pro Mefenoxam 2AQ Fungicide Active Ingredient; Mefenoxam - 22.5% No Bid

Item Notes: Unit price is per gallon. Preferred size is 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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23 10 Gallons Pro Plant Fungicide (Banol) Active Ingredient; Propamocarb Hydrochloride - 66.5% No Bid

Item Notes: Unit price is per gallon. Preferred size is 1 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

---

24 20 Gallons Trinity Fungicide Active Ingredient; Triticonazole - 19.2% No Bid

Item Notes: Unit price is per gallon. Preferred size is 2.5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Pacakge Sizes and Brand	List your package sizes and brand of product	

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25 8 Gallons Acelepryn Insecticide BR>Active Ingredient; Chlorantraniliprole - 18.4% No Bid

Item Notes: Unit price is per gallon. Preferred size is .5 Gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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26 60 Pounds Dylox 6.2G Insecticide Active Ingredient; Trichlorfon, dimethyl, 6.2% No Bid

Item Notes: Unit price is per pound. Preferred size is 30lb bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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27 14,000 Pounds UFLEXX 46-0-0 Fertilizer NO SUBSTITUTES Analysis: Urea Nitrogen stablized with Hydrexx; SGN: 210 $0.42

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes: Product bid is: 46-0-0 UFLEXX Granule Fertilizer, packaged in 50 pound bags, priced per pound of product

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product you are bidding.	Product bid is: UFLEXX 46-0-0 Granule Fertilizer - Manufactured by: KOCH - 50 pound bags

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28 2,600 Pounds Polyon 0-0-45 Mini Fertilizer NO SUBSTITUTES WILL BE ACCEPTED Analysis: 100% Polymer Coated Sulfate of Potash No Bid

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

29 1,600 Pounds Andersons 18-9-18 Contec DG fertilizer with Fe & Mn Product #CDG181WM4 Analysis: 60% Mutech, potassium sulfate SGN:75 NO SUBSTITUTES WILL BE ACCEPTED — No Bid

Item Notes: Unit price is per pound. Preferred size is 40 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

30 3,000 Pounds County Club MD Greensgrade 18-3-18 fertilizer NO SUBSTITUTES Product #2129074 Analysis: 78% Meth-Ex, SOP, Micros SGN: 80 — No Bid

Item Notes: Unit price is per pound. Preferred size is 40 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

31 3,000 Pounds Country Club MD greensgrade 12-0-24 fertilizer Product #: 2135736 NO SUBSTITUTES Analysis: 65% Meth-Ex, SOP, Micros SGN: 80 — No Bid

Item Notes: Unit price is per pound. Preferred size is 40 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

32 6,500 Pounds Andersons 27-3-11 Fertilizer
Product #: AGC83011.1
NO SUBSTITUTES
Analysis: 48% extend, 48% Poly-S nitrogen potassium chloride
SGN: 240 — No Bid

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Bag	List your package sizes and brand of product	

33 2,000 Pounds Turf King 18-24-12 Starter Fertilizer $0.29
Analysis: 50% XCU, SOP
SGN: 220

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes: Price is per pound of product, packaged in 50 pound bags

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: Award 12-28-12 Granule Fertilizer, all Mineral with Prospect Plus - Manufactured by: EC Grow - Packaged in 50 pound bags

34 7,500 Pounds Turf King 21-0-10 Fertilizer w/ 3%Fe, and organics No Bid
Analysis: 50% of nitrogen from UFLEXX, potassium chloride, activated sewage, iron oxysulfate

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

35 25,250 Pounds Lebanon Proscapes 25-0-5 Fertilizer No Bid
Product #: 2254318
NO SUBSTITUTES
Analysis: 51% MESA, 1% Fe, SOP

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

36 29,250 Pounds Andersons 18-3-12 fertilizer w/ .164 Dimension No Bid
Product #: APT18DM5.3
NO SUBSTITUTES
Active ingredient: Dithiopyr, .164%
Analysis: Minimum 25% pcscu
SGN: 150 maximum

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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37 5,000 Pounds EC Grow 24-0-5 w/ .43% Barricade, 40% RXN nitrogen — No Bid
Active ingredient: Prodiamine, .43%
Analysis: 40% RXN nitrogen
SGN: 215 maximum

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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38 33,500 Pounds 0-0-7 fertilizer w/.67% acelepryn — No Bid
Active ingredient: Chlorantraniliprole, .67%
Analysis: Sulfate of Potash
SGN: 215

Item Notes: Unit price is per pound. Preferred size is 50 lb. bag

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

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39 45 Gallon s Tracker Spray Pattern Indicator — $20.10

Item Notes: Unit price is per gallon. Preferred size is 2.5 gallon

Supplier Notes: Bid price is per gallon of product, packages available are 2.5 gallon containers and 1 gallon containers - Not Regulated by EPA

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: Big Foot Blue Marking Dye - Manufacturer is: Brandt - Packaged in 2.5 gallon containers (1 gallon containers are also available at the same price)

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40 90 Gallons Cascade High Performance Water Infiltration — No Bid
Active ingredients: Alkyl phenol ethoxylate, 10%
Polyethylene glycols, 90%
NO SUBSTITUTES

Item Notes: Unit price is per gallon. Preferred size is 2.5 gallon

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	

---

41 2 Pounds Quniclorac 75 DF Active ingredient: Quiclorac: 3, 7 - dichloro-8-quinolinecarboxylic acid 75%, other indredients: 25% No Bid

Item Notes: Unit price is per pound. Preferred size is 1 pound

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Size and Brand	List your package size and brand of product	

---

42 10 Gallon Surge: sulfentrazone-67% 2,4-D dimethylamine salt 18.79% Mecoprop-p, dimethylamine salt 6.80%
Dicamba dimethylamine salt -3.02%. $54.30

Item Notes: Unit price is per gallon. Preferred size is 1 gallon

Supplier Notes: Bid price is per gallon product, packaged in 1 gallon containers

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of the product	Product bid is: Surge Herbicide (as requested) - Manufactured by: PBI Gordon Company - Package size bid is: 1 gallon containers - EPA Reg #2217-867

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43 10 Gallons Surflan: Active ingredient: Oryzalin: 3,5-dinitro-N4N4-dipropylsulfanilamide 40.4% Other ingredients 59.6% $58.50

Item Notes: Unit price is per gallon. Preferred size is 1 gallon

Supplier Notes: Bid price is per gallon product, packaged in 2.5 gallon containers

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of the product	Product bid is: Surflan AS Herbicide - Manufactured by: UPI - Packaged in 2.5 gallon containers - EPA Reg#70506-44

44 50 Gallons Liquid Herbicide, POLARIS $45.50
Active Ingredient: Isoproplyamine Salt of Imazapyr:
(2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarbowylic acid)
- 27.7% and Other Ingredients of 72.3%

Manufacturer: Nurarm or Equivalent

Item Notes: Unit price is per gallon. Preferred size is 2.5 gallon

Supplier Notes: Bid price is per gallon or product, packaged in 2.5 gallon containers, has aquatic labeling as well as terrestrial labeling (lands)

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of the product	Product bid is: Arsenal Herbicide - Manufactured by: BASF - Packaged in 2.5 gallon containers - EPA Reg#241-346

45 24 Ounces Perspective Herbicide, Dry Flowable Active Ingredients: Aminocyclopyrachlor $5.44
6-amino-5-chloro-2-cyclopropyl-4-
pyrimidinecarboxylic acid - 39.5% Chlorsulfuron
2-Chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-
2-yl)aminocarbonyl]benzenesulfonamide 15.8% Other Ingredients - 44.7%

Manufacturer: Bayer or Equivalent

Item Notes: Unit price is per ounce. Preferred size is 20 oz.

Supplier Notes: Bid price is per one (1) ounce of product, package sizes available are - 1.25 lb. (20 ounce) containers or 5 lb. containers (80 ounce), either container size can be purchased at this per ounce price

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: Perspective Herbicide (as requested) - Manufactured by: Bayer - Package sizes are 1.25 lb. (20 oz) or 5 lb. cont. - EPA Reg#432-1569

46 100 Gallons Methylated Seed Oil (MSO) Surfactant Herbicide, 100% $9.20

Manufacturer: Brewer International or Equivalent

Item Notes: Unit price is per gallon. Preferred size is 2.5 gallon

Supplier Notes: Bid price is per gallon of product, available in 2.5 gallon containers only

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: Brewer MSO - Manufactured by: Brewer International - Package size available is 2.5 gallon containers - Not Regulated by EPA

47 100 Gallons Non-Ionic Surfactant Active Ingredient:Alkyl aryl polyoxyethylene glycol and other ethoxylated derivatives (surfactant) 70% Inert ingredients 30% $8.50

Item Notes: Unit price is per gallon. Preferred size is 2.5 gallons

Supplier Notes: Bid price is per gallon of product, available in 2.5 gallon containers only

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List your package sizes and brand of product	Product bid is: 90/10 Surfactant - Manufactured by: Brewer International - Package size available is 2.5 gallon containers - Not Regulated by EPA

48 1,200 Gallons Pathway Specialty Herbicide Active Ingredient: Picloram: 4-amino-3,5,6-trichloropicolinic acid, triisopropanolamine salt - 5.4% 2,4-dichlorophenoxyacetic acid, triisopropanolamine salt - 20.9% Inert Ingredients - 73.7% $27.90

Manufacturer: Dow AgroSciences or Equivalent

Item Notes: Unit price is per gallon. Preferred size is 2.5 gallons

Supplier Notes: Bid price is per gallon of product, available in 2.5 gallon containers only

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Package Sizes and Brand	List the package sizes and brand of product	Product bid is: Pathway Herbicide (as requested) - Manufactured by: DOW Chemical - Package size available is 2.5 gal.cont. only - EPA Reg #62719-31

Response Total: $53,774.26

ARSENAL®

herbicide

SPECIMEN

For control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland, and nonagricultural lands; and for establishment and maintenance of wildlife openings, release of unimproved Bermudagrass and Bahiagrass, bareground weed control, and for use under certain paved surfaces

Active Ingredient:	
isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)*	27.8%
Other Ingredients:	72.2%
Total:	100.0%

*Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon

EPA Reg. No. 241-346 **EPA Est. No.**

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCIÓN

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 inside for complete **First Aid**, **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

Net Contents:

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
The Chemical Company

FIRST AID	
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 by a poison control center or doctor. • **DO NOT** give anything by mouth to an unconscious person.
If in eyes	• Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by mouth to mouth, if possible. • Call a poison control center or doctor for further treatment advice.
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 BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).	

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed. Avoid contact with eyes or clothing.

Personal Protective Equipment (PPE)

Some materials that are chemically resistant to this product are listed below. If you want more options, follow the instructions for **Category A** on an EPA chemical-resistance category selection chart.

Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions are given for washables, 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 that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands with plenty of soap and water 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.

Physical and Chemical Hazards

Spray solutions of **Arsenal® herbicide** must be mixed, stored, and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Environmental Hazards

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. **DO NOT** apply to water except as specified in this label. Treatment of aquatic weeds may result in oxygen depletion or loss because of decomposition of dead plants. This oxygen loss may cause suffocation of some aquatic organisms. **DO NOT** treat more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. **DO NOT** contaminate water when disposing of equipment washwater or rinsate.

This pesticide is toxic to vascular plants and must be used strictly in accordance with the drift precautions on the label.

Directions For Use

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

Arsenal® herbicide must be used only in accordance with the instructions on the label attached to the container. Keep containers closed to avoid spills and contamination.

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.

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

NONAGRICULTURAL 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 plants on farms, forests, nurseries, or greenhouses.

DO NOT enter or allow others to enter treated areas until sprays have dried.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

Pesticide Storage

DO NOT store below 10° F.

Pesticide Disposal

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

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity ≤ 5 gallons) 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.

Triple rinse containers too large to shake (capacity > 5 gallons) 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 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 Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

(continued)

STORAGE AND DISPOSAL *(continued)*

Container Handling *(continued)*

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

In Case of Emergency

In case of large-scale spillage regarding this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- BASF Corporation 1-800-832-HELP (4357)

Steps to be taken in case material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

Product Information

Arsenal® herbicide is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to control undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland and nonagricultural lands. Aquatic sites consist of standing and flowing water, estuarine/marine, wetland, and riparian areas. Nonagricultural lands include private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, and sewage disposal areas); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, and barrier strips); industrial sites - outdoor (including lumberyards, pipeline and tank farms); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails). **Arsenal** may also be used for the release of unimproved Bermudagrass and Bahiagrass, for bareground weed control, and for use under certain paved surfaces.

Herbicidal Activity

Arsenal will control most annual and perennial grass and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline. **Arsenal** is readily absorbed through emergent leaves and stems and is translocated rapidly throughout the plant with accumulation in the meristematic regions. For maximum activity, weeds should be growing vigorously at the time of application, and the spray solution should include a surfactant (see **Adjuvants** section for specific use directions). Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into and kills underground or submerged storage organs, which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until 2 or more weeks after application. Complete kill of plants may not occur for several weeks. **Arsenal** applications are rainfast 1 hour after treatment.

Product Use and Restrictions

Applications may be made for control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland and nonagricultural lands. Aquatic sites consist of standing and flowing water; estuarine/marine, wetland, and riparian areas; for control of most annual and perennial grass weeds, broadleaf weeds, vines and brambles, and hardwood brush and trees for forestry site preparation and release of conifers from woody and herbaceous competition. **Arsenal** may also be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see **Conifer Release Treatment**).

Nonagricultural lands include private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, and sewage disposal areas); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, and barrier strips); industrial sites - outdoor (including lumberyards, pipeline and tank farms); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails).

Restrictions and Limitations

- **DO NOT** use on food crops.
- **DO NOT** apply this product within 1/2 mile upstream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water, such as a lake, pond, or reservoir.
- **DO NOT** apply to water used for irrigation except as described in **Product Use and Restrictions** section of this label.
- Keep from contact with fertilizers, insecticides, fungicides, and seeds.
- **DO NOT** drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the treated soil may be washed or moved into contact with their roots.
- **DO NOT** use on lawns, walks, driveways, tennis courts, or similar areas.
- **DO NOT** side trim desirable vegetation with this product unless severe injury and plant death can be tolerated. Prevent drift of spray to desirable plants.
- Clean application equipment after using this product by thoroughly flushing with water.

Nonagricultural Lands and Forestry Sites

- **DO NOT** apply more than 1.5 lbs acid equivalent (ae) imazapyr (equivalent to 96 fl ozs of **Arsenal® herbicide**) per acre per year.

Pasture/Rangeland Sites

- For spot treatment only.
- **DO NOT** treat more than 1/10 of the available area to be grazed or cut for hay.
- **DO NOT** apply more than 0.75 lb ae imazapyr (equivalent to 48 fl ozs of **Arsenal**) per acre per year.

Aquatic Sites

- **DO NOT** apply more than 1.5 lbs ae imazapyr (equivalent to 96 fl ozs of **Arsenal**) per acre per year.
- **Public waters** - Application of **Arsenal** to water can only be made by federal or state agencies, such as Water Management District personnel, municipal officials, and the U.S. Army Corps of Engineers, or those applicators who are licensed or certified as aquatic pest control applicators and are authorized by the state or local government. Treatment to other than non-native invasive species is limited to only those plants that have been determined to be a nuisance by a federal or state government entity.
- **Permitting** - Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.
- **Private waters** - Applications may be made to private waters that are still, such as ponds, lakes, and drainage ditches where there is minimal or no outflow to public waters.
- **Aerial application** - Aerial application to aquatic sites is restricted to helicopter only.
- **Irrigation water** - Application to water used for irrigation that results in **Arsenal** residue greater than 1.0 ppb **MUST NOT** be used for irrigation purposes for 120 days after application or until **Arsenal** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less. When applications are made within 500 feet of an active irrigation intake, **DO NOT** irrigate for at least 24 hours following application to allow for dissipation.

Recreational Use of Water in Treatment Area

There are no restrictions on the use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock Use of Water in/from Treatment Area

There are no restrictions on livestock consumption of water from the treatment area.

Restrictions for Potable Water Intakes

DO NOT apply **Arsenal** directly to water within 1/2 mile upstream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as a lake, pond, or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake must be turned off during application and for a minimum of 48 hours after application. These aquatic applications may be made only in cases where there are alternative water sources or holding ponds that would permit turning off an active potable water intake for a minimum period of 48 hours after applications.

NOTE: Existing potable water intakes that are no longer in use, such as those replaced by connections to wells or a municipal water system, are not considered to be active potable water intakes. This restriction does not apply to intermittent, inadvertent overspray of water in terrestrial use sites.

Quiescent or Slow-moving Waters

In lakes and reservoirs, **DO NOT** apply **Arsenal** within 1 mile of an active irrigation water intake during the irrigation season. Applications less than 1 mile from an active irrigation water intake may be made during the off-season if the irrigation intake will remain inactive for a minimum of 120 days after application or until **Arsenal** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less.

Precautions for Avoiding Injury to Nontarget Plants

Untreated desirable plants can be affected by root uptake of **Arsenal® herbicide** from treated soil. Injury or loss of desirable plants may result if **Arsenal** is applied on or near desirable plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. When making application along shorelines where desirable plants may be present, use caution to avoid spray contact with their foliage or spray application to the soil in which they are rooted. Shoreline plants that have roots which extend into the water in an area where **Arsenal** has been applied generally will not be adversely affected by uptake of the herbicide from the water.

If treated vegetation is to be removed from the application site, **DO NOT** use the vegetative matter as mulch or compost on or around desirable species.

Managing Off-target Movement

Aerial Application

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the wingspan or 90% of the rotor-blade diameter to reduce spray drift.
- Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Ground Boom Application

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Wind Erosion

Avoid treating powdery, dry, or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

Adjuvants

Postemergence applications of **Arsenal** require the addition of a spray adjuvant. When making aquatic applications, only spray adjuvants approved or appropriate for aquatic use must be used.

Nonionic Surfactant

Use a nonionic surfactant (NIS) at the rate of 0.25% volume/volume (v/v) or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with a hydrophilic-to-lipophilic balance (HLB) ratio between 12 and 17 with at least 70% surfactant in the formulated product. Alcohol, fatty acid, oil, ethylene glycol, or diethylene glycol should not be considered as surfactants to meet the above requirements.

Methylated Seed Oil or Vegetable Oil Concentrate

Instead of a surfactant, a methylated seed oil (MSO) or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, mix MSO or vegetable-based seed oil concentrates at a rate of 1% of total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in **Arsenal** deposition and uptake by plants under moisture or temperature stress.

Silicone-based Surfactant

See manufacturer's label for specific rates. Silicone-based surfactants may reduce the surface tension of the spray droplet allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

Invert Emulsions

Arsenal can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray runoff, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

Other

An antifoaming agent, spray pattern indicator, or drift-reducing agent may be applied at the product labeled rate if necessary or desired.

Tank Mixes

Arsenal may be tank mixed with other herbicides.

Consult manufacturer's labels for specific rate restrictions and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

Application Methods

Arsenal® herbicide may be selectively applied using low-volume directed application techniques or may be broadcast-applied using ground equipment, watercraft, or aircraft. Aerial applications to aquatic sites must be made by helicopter. In addition, **Arsenal** may also be applied using cut-stump, cut-stem, and frill or girdle treatment techniques within nonagricultural lands, pasture/rangeland, and aquatic sites; see **Aerial Application** and **Ground Application** sections for additional details.

Aerial Application

All precautions must be taken to minimize or eliminate spray drift. Both fixed-wing aircraft and helicopters can be used to apply **Arsenal** on nonagricultural lands, but only helicopters can be used for aquatic applications. **DO NOT** make applications by fixed-wing aircraft or helicopter unless appropriate buffer zones can be maintained to prevent spray drift out of the target area; or when treating open tracts of land, spray drift as a result of fixed-wing aircraft application can be tolerated. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a **Microfoil™ boom**, **Thru-Valve™ boom**, or raindrop nozzles, must be used and calibrated. Except when applying with a **Microfoil boom**, a drift control agent may be added at the specified label rate. **DO NOT** side trim with **Arsenal** unless death of treated tree can be tolerated.

Uniformly apply the specified amount of **Arsenal** in 2 to 30 gallons of water per acre. A foam-reducing agent may be added at the specified label rate, if needed.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Ground Application

Foliar Application

Low-volume Foliar Application

Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.5% to 5% **Arsenal** plus surfactant; see the **Adjuvants** section of this label for specific use directions. A foam-reducing agent may be applied at the specified label rate, if needed. For difficult-to-control species (see **Aquatic Weed Control** and **Terrestrial Weed Control** sections for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 3 quarts of **Arsenal** per acre in aquatic sites and nonagricultural lands and 1.5 quarts per acre in pasture/rangeland. Excessive wetting of foliage is not necessary.

For low-volume foliar application, select proper nozzles to avoid overapplication. Proper application is critical to ensure desirable results. Best results are achieved when spray covers the crown and approximately 70 percent of the plant. The use of an even, flat-fan tip with a spray angle of 40 degrees or less will aid in proper deposition.

Appropriate tip sizes include 4004E or 1504E. For a straight-stream and cone pattern, adjustable cone nozzles, such as 5500 X3 or 5500 X4, may be used. Attaching a rollover valve onto a Spraying Systems Model 30 gunjet or other similar spray gun allows for the use of both flat-fan and cone tips on the same gun.

Moisten, but **DO NOT** drench target vegetation causing spray solution to run off.

Low-volume Foliar Application with Backpack. For low-growing species, spray down on the crown, covering crown and penetrating approximately 70% of the plant.

For target species 4 to 8 feet tall, swipe the sides of target vegetation by directing spray to at least 2 sides of the plant in smooth vertical motions from the crown to the bottom. Make sure to cover the crown whenever possible.

For target species over 8 feet tall, lace sides of target vegetation by directing spray to at least 2 sides of the target in smooth zigzag motions from crown to bottom.

Low-volume Foliar Application with Hydraulic Handgun Application Equipment. Use the same technique as described for **Low-volume Foliar Application with Backpack**.

For broadcast application, simulate a gentle rain near the top of target vegetation allowing spray to contact the crown and penetrate the target foliage without falling to the understory. Herbicide spray solution that contacts the understory may result in severe injury or death of plants in the understory.

High-volume Foliar Application

For optimum performance when spraying medium-density to high-density vegetation, use equipment calibrated to deliver up to 100 gallons of spray solution per acre (GPA). Spray solutions exceeding 100 GPA may result in excessive spray runoff, causing increased ground cover injury and injury to desirable species.

To prepare the spray solution, thoroughly mix **Arsenal** in water and add a surfactant; see **Adjuvants** section for specific use directions and rates for surfactants. A foam-reducing agent may be added at the specified label rate, if needed. For difficult-to-control species (see **Aquatic Weed Control** and **Terrestrial Weed Control** sections for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 3 quarts of **Arsenal** per acre in aquatic sites and nonagricultural lands and 1.5 quarts per acre in pasture/rangeland. Uniformly cover the foliage of the vegetation to be controlled, but **DO NOT** apply to runoff. Excessive wetting of foliage is not necessary.

Side Trimming

DO NOT side trim with **Arsenal® herbicide** unless severe injury or death of the treated tree can be tolerated. **Arsenal** is readily translocated and can result in death of the entire tree.

Cut-surface Treatment

Arsenal may be used to control undesirable woody vegetation by applying the **Arsenal** solution to the cambium area of freshly cut stump surfaces or to fresh cuts on the stem of target woody vegetation. Application can be made any time of the year except during periods of heavy sap flow in the spring. **DO NOT** overapply solution causing runoff from the cut surface.

Injury may occur to desirable woody plants if shoots extend from the same root system or their root systems are grafted to those of the treated tree.

Cut-surface Application with Dilute and Concentrate Solutions

Arsenal may be mixed as either a concentrate or dilute solution. The dilute solution may be used for application to the cut surface of the stump or to cuts on the stem of target woody vegetation. Concentrate solutions may be used for application to cuts on the stem. Use of the concentrate solution permits application to fewer cuts on the stem, especially for large-diameter trees. Follow application instructions for proper application techniques for each type of solution.

- To prepare a dilute solution, mix 8 to 12 fluid ounces of **Arsenal** with 1 gallon of water. A surfactant or penetrating agent may improve uptake through partially callused cambiums.
- To prepare a concentrate solution, mix 2 quarts of **Arsenal** with no more than 1 quart of water.

Cut-stump Treatment

Dilute Solution. Spray or brush the solution onto the cambium area of the freshly cut stump surface. Ensure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

Cut-stem Treatment (injection, hack-and-squirt)

Dilute Solution. Using standard injection equipment, apply 1 milliliter (mL) of solution at each injection site around the tree with no more than 1-inch intervals between cut edges. Ensure that the injector completely penetrates the bark at each injection site.

Concentrate Solution. Using standard injection equipment, apply 1 mL of solution at each injection site. Make at least 1 injection cut for every 3 inches of diameter at breast height (DBH) on the target tree. For example, a 3-inch DBH tree will receive 1 injection cut, and a 6-inch DBH tree will receive 2 injection cuts. On trees requiring more than 1 injection site, place the injection cuts at approximately equal intervals around the tree.

Frill or Girdle Treatment

Using a hatchet, machete, or chainsaw, make cuts through the bark and completely around the tree to expose the cambium. The cut should angle downward extending into the cambium enough to expose at least 2 growth rings. Using a spray applicator or brush, apply a 25% to 100% solution of **Arsenal** into each cut until thoroughly wet. Avoid applying so much herbicide that runoff to the ground or water occurs.

Forestry Use

Site Preparation Treatment

Arsenal may be used to control labeled grass weeds, broadleaf weeds, vines and brambles, and woody brush and trees on forest sites in advance of regeneration for the following conifer crop species:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine	*Pinus taeda*	48 to 80
Loblolly X pitch hybrid		
Longleaf pine	*Pinus palustris*	
Shortleaf pine	*Pinus echinata*	
Virginia pine	*Pinus virginiana*	
Slash pine	*Pinus elliottii*	40 to 64
Coastal redwood	*Sequoia sempervirens*	24 to 48
Douglas fir	*Pseudotsuga menziesii*	
Western hemlock	*Tsuga heterophylla*	
California red fir	*Abies magnifica*	24 to 40
California white fir	*Abies concolor*	
Jack pine	*Pinus banksiana*	24 to 32
Lodgepole pine	*Pinus contorta*	
Pitch pine	*Pinus rigida*	
Ponderosa pine	*Pinus ponderosa*	
Sugar pine	*Pinus lambertiana*	
White pine	*Pinus strobus*	
Black spruce	*Picea mariana*	
Red spruce	*Picea rubens*	
White spruce	*Picea glauca*	

Use the label rate of **Arsenal** per acre applied as a broadcast foliar spray for long-term control of labeled woody plants and residual control of herbaceous weeds. Within 4 to 6 weeks of treatment, grass and other herbaceous weeds will be controlled and may provide fuel to facilitate a site preparation burn, if desired, to control conifers or other species tolerant to the herbicide.

Apply the label rate of **Arsenal** per acre in 5 to 30 gallons total spray solution for helicopter applications or 5 to 100 gallons total spray solution for mechanical ground spray and backpack applications. Use a minimum of 0.5% by volume nonionic surfactant (NIS). Use the higher label rates of **Arsenal** and higher spray volumes when

controlling particularly dense or multilayered canopies of hardwood stands or difficult-to-control species.

In certain cases, tank mixes may be necessary for chemical control of conifers and other species tolerant to **Arsenal® herbicide**. Observe all precautions and restrictions on the product labels. Always follow the most restrictive label. Combinations with other products labeled for forest site preparation may kill certain plants such as legumes and blackberry, which are desirable for wildlife habitat.

Where quick initial brownout (deadening of foliage) is desired for burning, apply a tank mixture of 32 fl ozs to 64 fl ozs **Arsenal** with 16 fl ozs to 64 fl ozs glyphosate or 16 fl ozs to 48 fl ozs triclopyr ester per acre. For control of seedling pines, apply 32 fl ozs to 64 fl ozs **Arsenal** with 3 to 4 quarts glyphosate. For site preparation, rates less than 48 fl ozs **Arsenal** will provide suppression of hardwood brush and trees; some resprouting may occur.

DO NOT plant seedlings of black spruce (*Picea mariana*) or white spruce (*Picea glauca*) on sites broadcast-treated with **Arsenal** or into the treated zone of spot or banded applications for 3 months following application or injury may occur.

Herbaceous Weed Control

Use **Arsenal** for selective weeding in the following conifers:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine	*Pinus taeda*	12 to 20
Loblolly X pitch hybrid		
Virginia pine	*Pinus virginiana*	
Longleaf pine[1]	*Pinus palustris*	8 to 12
Slash pine[1]	*Pinus elliottii*	
Douglas fir[1]	*Pseudotsuga menziesii*	

[1] Use of surfactant is not recommended.

Arsenal may be applied as a broadcast treatment, banded over tree rows, or as a directed spray for release of young conifers from herbaceous weeds. To prevent possibility of conifer injury, **DO NOT** apply **Arsenal** when conifers are under stress from drought, disease, animal or winter injury, planting shock, or other stresses reducing conifer vigor. Broadcast applications may be made by helicopter, ground, or backpack sprayer. For difficult-to-control weeds, use the higher labeled rates. Where herbaceous weeds have overtopped conifer seedlings, a nonionic surfactant may be added to improve weed control (except for slash pine, long-leaf pine, and Douglas fir), at a rate not to exceed 0.5% of spray solution volume. Some minor conifer growth inhibition may be observed when herbaceous weed control treatments are made during periods of active conifer growth.

Arsenal may also be applied using backpack or handheld sprayers to control herbaceous weeds around individual conifer seedlings. Mix 0.8 fl oz to 1.2 fl ozs **Arsenal** and 0.2 oz nonionic surfactant per gallon of water. Direct the spray to the weeds and minimize the amount applied to conifer foliage for best conifer tolerance. Ensure that maximum labeled rates per acre for previously listed crop species are not exceeded.

Arsenal may be tank mixed with sulfometuron to broaden the spectrum of weeds controlled. For loblolly pine, apply 8 fl ozs to 12 fl ozs **Arsenal** plus 1 oz to 2 ozs sulfometuron per acre. The application of **Arsenal** plus sulfometuron on other conifer species may cause growth suppression.

Conifer Release Treatment

Arsenal may be applied as a broadcast or directed spray application for suppression of labeled brush, tree, and herbaceous weed species. Directed spray applications may be made with low-volume applications in conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that maximum labeled rates per acre listed for the following crop species are not exceeded.

Broadcast Applications
for release of the following conifers from hardwood competition:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine[3]	*Pinus taeda*	24 to 40
Loblolly X pitch hybrid[3]		
Virginia pine[3]	*Pinus virginiana*	
Longleaf pine	*Pinus palustris*	24 to 32
Pitch pine	*Pinus rigida*	
Shortleaf pine	*Pinus echinata*	
Slash pine	*Pinus elliottii*	
White pine[1]	*Pinus strobus*	16 to 32
California red fir	*Abies magnifica*	16 to 24
California white fir	*Abies concolor*	
Lodgepole pine[2]	*Pinus contorta*	
Douglas fir[2]	*Pseudotsuga menziesii*	
Jack pine[2]	*Pinus banksiana*	12 to 24
Black spruce[2]	*Picea mariana*	
Red spruce[2]	*Picea rubens*	
White spruce[2]	*Picea glauca*	

[1] **DO NOT** make applications to white pine stands younger than three years old. To minimize potential white pine injury, release treatments should not be made prior to July 15.

[2] Applications should be made after formation of final conifer resting buds in the fall or height growth inhibition may occur.

[3] **Mid-rotation release:** For broadcast applications below the pine canopy in established stands of loblolly pine, loblolly X pitch hybrid, and Virginia pine, use 32 fl ozs to 64 fl ozs product per acre. For mid-rotation release of other species, use rates listed in chart above.

For slash pine and longleaf pine, broadcast release treatments over the top of pines for the purpose of woody plant control must be made after August 15 and only in stands 2 through 5 years old. For applications over the top of slash pine and longleaf pine, DO NOT add surfactant and use lower labeled rates on sandy soils.

Apply the label rate of **Arsenal® herbicide** per acre when making broadcast applications with helicopter or ground spray equipment. Refer to mixing and application instructions for proper spray volumes. A nonionic surfactant may be added at no more than 0.25% by volume.

Use the higher label rates of **Arsenal** when controlling particularly dense stands or difficult-to-control species.

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, **DO NOT** make broadcast applications to conifer stands except loblolly pine before the end of the second growing season. To minimize potential conifer height growth inhibition, broadcast release treatments may be made late in the growing season. To prevent possibility of conifer injury, **DO NOT** apply **Arsenal** when conifers are under stress from drought, disease, animal or winter injury, or other stresses reducing conifer vigor.

Arsenal may be used to release loblolly pine seedlings during the first growing season following planting or for one-year-old natural loblolly pine regeneration. For one-year-old loblolly pine release, apply 24 fl ozs to 40 fl ozs per acre of **Arsenal** after July 15. Rates below 32 fl ozs per acre are intended for hardwood growth suppression; expect hardwood resprouting.

Spot Treatment of Undesirable Hardwood Vegetation

Arsenal may be used as a directed foliar or cut-stem application to control undesirable brush and hardwoods in the management of stands of all ages for the conifer species listed in the broadcast application section above. Refer to mixing and application instructions in the directed foliar or cut-stem sections above for proper use rates, equipment, and application techniques. **DO NOT** exceed maximum labeled rates per acre listed for crop species. Cut-stem applications may be used for spot treatment of undesirable hardwoods in Ponderosa pine stands using 24 fl ozs or less of **Arsenal** per acre.

Avoid direct application to desired plant species or injury may occur. Injury may occur to nontarget or desirable hardwoods or conifers if they extend from the same root system, or their root systems are grafted to those of the treated tree, or their roots extend into the treated zone.

Late Rotation Vegetation Control in Western Conifer

In California, the Pacific Northwest and Inland Northwest, broadcast aerial applications of **Arsenal** up to 48 fl ozs per acre are permissible in conifer stands that are targeted for harvesting the year following treatment. Use minimum spray volume of 15 gallons per acre. Significant conifer injury or mortality must be expected. **DO NOT** use this treatment if conifer injury or mortality cannot be tolerated.

Bag and Spray Application for Conifer Release

In Douglas fir and Ponderosa pine stands, broadcast applications of **Arsenal** up to 32 fl ozs per acre are permissible when the trees are covered by bags prior to the application. The bags must prevent the spray mix from contacting the conifer foliage. On sites with coarse textured soils (e.g. decomposed granite, pumice, sandy or rocky sites) or low levels of soil organic matter (generally 5% or less), significant conifer growth inhibition and mortality is possible. **DO NOT** use this treatment on these types of sites if conifer growth inhibition and mortality cannot be tolerated.

Nonagricultural Land Use

Arsenal may be used for woody and herbaceous weed control in nonagricultural lands including private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, and sewage disposal areas); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, and barrier strips); industrial sites - outdoor (including lumberyards, pipeline and tank farms); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails).

Applications to nonagricultural lands are not applicable to treatment of commercial timber or other plants grown for sale or other commercial use, or for commercial seed production, or for research purposes.

Brush Control

Use the specified rate of **Arsenal** with the preferred application technique for control of undesirable brush.

Tank Mixes and Application Rates for Low-volume Foliar Brush Control*

Target Vegetation	Arsenal Rate (% by volume)	Tank Mix
Mixed hardwoods without elm, locust, or pine	1.0 to 1.5	Surfactant
Mixed hardwoods containing elm, locust, and pine	0.5 to 1.0	**Accord®** at 2% to 3% by volume plus surfactant
Mixed hardwoods with locust and pine but no elm		**Krenite®** at 2% to 5% by volume plus surfactant
Mixed hardwoods with locust and elm but no pine		**Escort®** at 2 ozs/A **or** 2.3 grams/gal plus surfactant

* Tank mixes with 2,4-D or products containing 2,4-D have resulted in reduced **Arsenal** efficacy.

Backpack and Handheld Spray Mixing Guide

% solution	Product per gallon of mix (fl ozs)	Product per 4-gallon backpack (fl ozs)
0.25	0.3	1.3
0.5	0.6	2.6
1.0	1.3	5.1
2.0	2.6	10.2
3.0	3.8	15.4
5.0	6.4	25.6

Measuring Chart

128 fluid ounces	=	1 gallon
16 fluid ounces	=	1 pint
8 pints	=	1 gallon
4 quarts	=	1 gallon
2 pints	=	1 quart

Selective Control of Undesirable Weeds in Unimproved Bermudagrass and Bahiagrass

Arsenal® herbicide may be used on unimproved Bermudagrass and Bahiagrass turf such as roadsides, utility rights-of-way, and other nonagricultural lands. **Arsenal** application on established common and coastal Bermudagrass and Bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the Bermudagrass and Bahiagrass. Treatment of Bermudagrass with **Arsenal** results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre.

Temporary yellowing of grass may occur when treatment is made after growth begins.

- **DO NOT** add surfactant in excess of the specified rate (1 fl oz per 25 gallons of spray solution).
- **DO NOT APPLY** to grass during its first growing season.
- **DO NOT APPLY** to grass under stress from drought, disease, insects, or other causes.

Dosage Rate and Timing

Bermudagrass. Apply **Arsenal** at 6 fl ozs to 12 fl ozs per acre when Bermudagrass is dormant. Apply **Arsenal** at 6 fl ozs to 8 fl ozs per acre after Bermudagrass has reached full greenup. Applications made during greenup will delay greenup. Include a surfactant in the spray solution.

For additional preemergence control of annual grass and small-seeded broadleaf weeds, add **Pendulum® AquaCap™ herbicide** at the rate of 3.1 to 6.3 pints per acre. Consult the **Pendulum AquaCap** label for weeds controlled and for other use directions and precautions.

For control of Johnsongrass in Bermudagrass turf, apply **Arsenal** at 8 fl ozs per acre, plus **Roundup® herbicide** at 12 fl ozs per acre, plus surfactant. For additional control of broadleaves and vines, **Garlon® 3A herbicide** may be added to the above mix at 1 to 2 pints per acre. Observe all precautions and restrictions on the **Garlon 3A** and **Roundup** labels.

Bahiagrass. Apply **Arsenal** at 4 fl ozs to 8 fl ozs per acre when Bahiagrass is dormant or after grass has initiated greenup but has not exceeded 25% greenup. Include a surfactant in the spray solution; see **Adjuvants** section for specific use directions for surfactants.

Weeds Controlled in Unimproved Bermudagrass and Bahiagrass

Common Name	Scientific Name
Bedstraw*	*Galium* spp.
Bishopweed*	*Ptilimnium capillaceum*
Buttercup*	*Ranunculus parviflorus*
Carolina geranium	*Geranium carolinianum*
Fescue	*Festuca* spp.
Foxtail	*Setaria* spp.
Little barley	*Hordeum pusillum*
Seedling Johnsongrass	*Sorghum halepense*
White clover	*Trifolium repens*
Wild carrot	*Daucus carota*
Yellow woodsorrel	*Oxalis stricta*

* Use not permitted in California unless otherwise directed by supplemental labeling.

Grass Growth and Seedhead Suppression

Arsenal may be used to suppress growth and seedhead development of certain turfgrass in unimproved areas. When **Arsenal** is applied to desirable turf, it may result in temporary turf damage and/or discoloration. Effects to the desirable turf may vary with environmental conditions. For optimum performance, apply before culm elongation. Applications may be made before or after mowing. If applied before mowing, allow at least 3 days of active growth before mowing. If applied after mowing, allow sufficient time for grass to recover before applying this product or injury may be amplified.

DO NOT APPLY to turf under stress (drought, cold, insect damage, etc.) or severe injury or death may occur.

Bermudagrass. Apply **Arsenal** at 6 fl ozs to 8 fl ozs per acre from early greenup to before seedhead initiation. **DO NOT** add surfactant for this application.

Cool-season Unimproved Turf. Apply **Arsenal** at 2 fl ozs per acre plus 0.25% nonionic surfactant. For increased suppression, **Arsenal** may be tank mixed with products such as **Embark® growth regulator** (8 fl ozs per acre). Tank mixes may increase injury to desired turf. Consult each product label for labeled turf species and other use directions and precautions. Tank mixes with 2,4-D or products containing 2,4-D may decrease the effectiveness of **Arsenal**.

Total Vegetation Control where Bare Ground is Desired

Arsenal® herbicide is an effective herbicide for pre-emergence or postemergence control of many annual and perennial broadleaf and grass weeds where bare ground is desired. **Arsenal** is particularly effective on hard-to-control perennial grasses. **Arsenal** at 1.5 to 6 pints per acre can be used alone or in tank mix with herbicides approved for use in bare ground. The degree and duration of control are dependent on **Arsenal** rate used, tank mix partner, volume of carrier, soil texture, rainfall, and other conditions.

Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

Applications of **Arsenal** may be made any time of the year. Use equipment calibrated to deliver desired gallons per acre spray volume and uniformly distribute the spray pattern over the treated area.

Postemergence Application. Always use a spray adjuvant (see **Adjuvants** section of this label) when making a postemergence application. For optimum performance on tough-to-control annual grass weeds, apply **Arsenal** at a total volume of 100 gallons per acre or less. For quicker burndown or brownout of target weeds, **Arsenal** may be tank mixed with **Roundup® herbicide**. Tank mixes with 2,4-D or products containing 2,4-D may reduce the performance of **Arsenal**. Always follow the most restrictive label restrictions and precautions for all products used when tank mixing.

Spot Treatment. Arsenal may be used as a follow-up treatment to control escapes or weed encroachment in a bareground situation. To prepare the spray solution, thoroughly mix in each gallon of water 0.5% to 5% **Arsenal** plus an adjuvant. For increased burndown, include **Roundup** as a tank mixture. For added residual weed control or to increase the weed spectrum, add **Pendulum® AquaCap™ herbicide**, **Overdrive® herbicide**, or diuron. Always follow the most restrictive label restrictions and precautions for all products used when tank mixing.

Control of Undesirable Weeds under Paved Surfaces

Arsenal can be used under asphalt, pond liners, and other paved areas, **ONLY** in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

Use **Arsenal** only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers, or other vegetative plant parts are present in the site, remove them by scalping with a grader blade to a depth sufficient to ensure their complete removal.

Follow **Arsenal** applications with paving as soon as possible. **DO NOT** apply where **Arsenal** may contact the roots of desirable trees or other plants.

Arsenal is not to be used under pavement on residential properties, such as driveways or parking lots, or for use in recreational areas, such as under bike or jogging paths, golf cart paths, or tennis courts, or where landscape plantings could be anticipated.

Injury or death of desirable plants may result if **Arsenal** is applied where roots are present or where roots may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities (drip line).

Apply to the soil surface only when final grade is established. **DO NOT** move soil following **Arsenal** application.

Apply **Arsenal** in sufficient water (at least 100 gals per acre) to ensure thorough and uniform wetting of the soil surface, including shoulder areas. Add **Arsenal** at a rate of 3 quarts per acre (2.2 fluid ounces per 1000 square feet) to clean water in the spray tank during filling operation. Agitate before spraying.

If soil is not moist before treatment, incorporation of **Arsenal** is needed for herbicide activation. Incorporate **Arsenal** into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. **DO NOT** allow treated soil to wash or move into untreated areas.

Spot Treatment and Crack-and-crevice Treatment

Use **Arsenal** as an initial or follow-up treatment to control weed escapes or weed encroachment in a bareground situation, including cracks and crevices in paved surfaces such as roadways, runways, and parking areas.

Grass Pasture and Rangeland Spot Treatment Weed Control

For control of undesirable vegetation in grass pasture and rangeland, **Arsenal** may be applied as a spot treatment at a rate of 2 to 48 fluid ounces of product per treated acre using any of the described ground application methods. Spot applications to grass pasture and rangeland may not exceed more than 1/10 of the area to be grazed or cut for hay. See appropriate sections of this label for specific use directions for the application method and vegetation control desired. **DO NOT** apply more than 48 fluid ounces of **Arsenal** per acre per year.

Grazing and Haying Restrictions

- There are no grazing restrictions following **Arsenal** application.
- **DO NOT** cut forage grass for hay for 7 days after **Arsenal** application.

Rangeland Use Instructions

Arsenal® herbicide may be applied to rangeland for control of undesirable vegetation to achieve one or more of the following vegetation management objectives:

- Control of undesirable (nonnative, invasive, and noxious) plant species
- Control of undesirable vegetation to aid in the establishment of desirable rangeland plant species
- Control of undesirable vegetation to aid in the establishment of desirable rangeland vegetation following a fire
- Control of undesirable vegetation to reduce wildfire fuel
- Release of existing desirable rangeland plant communities from the competitive pressure of undesirable plant species
- Control of undesirable vegetation for wildlife habitat improvement

To ensure the protection of threatened and endangered plants when applying **Arsenal** to rangeland:

- Federal agencies must follow NEPA regulations to ensure protection of threatened and endangered plants.
- State agencies must work with the Fish and Wildlife Service or the Service's designated state conservation agency to ensure protection of threatened and endangered plants.
- Other organizations or individuals must operate under a habitat conservation plan if threatened or endangered plants are known to be present on the land to be treated.

See the appropriate section(s) of this label for specific use directions for the desired rangeland vegetation management objective.

Arsenal must only be applied to a given rangeland acre as specific weed problems arise. Long-term control of undesirable weed species ultimately depends on the successful use of land management practices that promote the growth and sustainability of desirable rangeland plant species.

Rotational Crop Instructions

Rotational crops may be planted 12 months after applying **Arsenal** at the specified pasture and rangeland rate. Following 12 months after an **Arsenal** application and before planting any crop, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted in the previously treated area in the grass pasture/rangeland and grown to maturity. The test strip should include low areas and knolls and include variations in soil type and pH within the treated area. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year.

Use of **Arsenal** in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

Aquatic Weed Control

Arsenal may be applied for control of floating and emergent undesirable vegetation (see **Aquatic Weeds Controlled** and **Terrestrial Weeds Controlled**) in or near bodies of water that may be flowing, nonflowing, or transient. **Arsenal** may be applied to aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites, riparian sites, and seasonal wet areas. See **Product Use and Restrictions** section of this label for restrictions and instructions on aquatic uses.

Read and observe the following directions if aquatic sites are present in nonagricultural lands and are part of the intended treatment area.

Arsenal must be applied to the emergent foliage of the target vegetation and has little-to-no activity on submerged aquatic vegetation. **Arsenal** concentrations resulting from direct application to water are not expected to be of sufficient concentration or duration to control target vegetation. Apply **Arsenal** to maximize spray interception by target vegetation while minimizing the amount of overspray that enters the water.

Arsenal does not control plants that are completely submerged or have a majority of their foliage under water.

Arsenal may be applied with surface or helicopter application equipment in a minimum of 2 gallons of water per acre. When applying by helicopter, follow directions under the **Aerial Application** section of this label; otherwise, refer to the **Ground Application** section when using surface equipment.

Applications to moving bodies of water should be made while traveling upstream to prevent concentration of this herbicide in water. **DO NOT** apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When applying to target vegetation that covers a large percentage of the surface area of impounded water, treating the area in strips may avoid oxygen depletion because of decaying vegetation. Oxygen depletion may result in the suffocation of some sensitive aquatic organisms. If oxygen depletion is a concern, treat no more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas.

Avoid washoff of sprayed foliage by spray boat or recreational boat backwash for 1 hour after application.

Apply **Arsenal** at 1 to 3 quarts per acre depending on species present and weed density. **DO NOT** exceed the maximum label rate of 3 quarts per acre (1.5 lbs ae/A) per year. Use the higher labeled rates for heavy weed pressure. Consult **Aquatic Weeds Controlled** and **Terrestrial Weeds Controlled** for specific rates.

Arsenal® herbicide may be applied as a draw-down treatment in areas described above. Apply **Arsenal** to weeds after water has been drained and allow 14 days before reintroduction of water.

Weeds Controlled

Aquatic Weeds Controlled

Arsenal® herbicide will control the following target species as specified in the **Use Rates and Application Directions** column of the table. Rates are expressed in terms of product volume for broadcast applications and as a % solution for directed applications including spot treatments. **For % solution applications, DO NOT apply more than the equivalent of 3 quarts of Arsenal per acre.**

Common Name	Scientific Name	Use Rates and Application Directions
Floating Weeds		
*Floating heart	*Nymphodes* spp.	2 to 4 pints/A (0.5 to 1.0% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Frogbit	*Limnobium spongia*	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Spatterdock	*Nuphar luteum*	Apply a tank mix of: 2 to 4 pints/A **Arsenal** + 4 to 6 pints/A glyphosate (0.5% **Arsenal** + 1.5% glyphosate) in 100 GPA water for best control. Ensure 100% coverage of actively growing emergent foliage.
*Water hyacinth	*Eichhornia crassipes*	1 to 2 pints/A (0.5% solution) applied in 100 GPA water to actively growing foliage.
*Water lettuce	*Pistia stratiotes*	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
Emerged Weeds		
*Alligatorweed	*Alternanthera philoxeroides*	1 to 4 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Arrowhead, duck-potato	*Sagittaria* spp.	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Bacopa, lemon	*Bacopa* spp.	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Parrot feather	*Myriophyllum aquaticum*	Foliage must be above water for sufficient **Arsenal** uptake. Apply 2 to 4 pints/A **Arsenal** to actively growing emergent foliage.
*Pennywort	*Hydrocotyle* spp.	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Pickerelweed	*Pontederia cordata*	2 to 3 pints/A (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Taro, wild Coco yam Dasheen Elephant's ear	*Colocasia esculentum*	4 to 6 pints/A (1.5% solution) applied in 100 GPA with a high quality sticker adjuvant. Ensure good coverage of actively growing emergent foliage.

*** Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Emerged Weeds *(continued)*		
*Water chestnut	*Trappa natans*	4 to 6 pints/A (1.5% solution) applied in 100 GPA with a high quality sticker adjuvant. Ensure good coverage of actively growing emergent foliage.
*Water lily	*Nymphaea odorata*	2 to 3 pints/A (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Water primrose	*Ludwigia uruguayensis*	4 to 6 pints/A (1.5% solution). Ensure 100% coverage of actively growing emergent foliage.
Terrestrial/Marginal Weeds		
*Aquatic nightshade Soda apple	*Solanum tampicense*	2 pints/A applied to foliage
*Bamboo, Japanese	*Phyllostachys* spp.	3 to 4 pints/A applied to foliage when plant is actively growing; before setting seedhead. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Beach, vitex	*Vitex rotundifolia*	5% solution + 1% MSO foliar spray 17% solution stem injection (hack and squirt)
Brazilian pepper Christmasberry	*Schinus terebinthifolius*	2 to 4 pints/A applied to foliage
Cattail	*Typha* spp.	2 to 4 pints/A (1% solution) applied to actively growing green foliage after full leaf elongation. Lower rates will control cattail in the North; higher rates are needed in the South.
Chinese tallow tree	*Sapium sebiferum*	16 to 24 fl ozs/A applied to foliage
Cogongrass	*Imperata cylindrica*	Burn foliage, till area; then fall-spray 2 quarts/A **Arsenal® herbicide** + MSO applied to new growth.
Cordgrass, prairie	*Spartina* spp.	4 to 6 pints/A applied to actively growing foliage
*Cutgrass	*Zizaniopsis milliacea*	4 to 6 pints/A applied to actively growing foliage
*Elephant grass Napier grass	*Pennisetum purpureum*	3 pints/A applied to actively growing foliage
*Flowering rush	*Butomus umbellatus* L.	2 to 3 pints/A applied to actively growing foliage
Giant reed Wild cane	*Arundo donax*	4 to 6 pints/A applied in spring to actively growing foliage
*Golden bamboo	*Phyllostachys aurea*	3 to 4 pints/A applied to foliage when plant is actively growing; before setting seedhead. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Junglerice	*Echinochloa colonum*	3 to 4 pints/A applied to actively growing foliage
Knapweed	*Centaurea* spp.	**Russian knapweed:** 2 to 3 pints/A + 1 quart/A MSO fall-applied after senescence begins
Knotweed, Japanese	*Polygonum cuspidatum* *Fallopia japonica*	3 to 4 pints/A applied postemergence to actively growing foliage

*** Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Terrestrial/Marginal Weeds *(continued)*		
Melaleuca Paperbark tree	*Melaleuca quinquenervia*	• **Established stands** - Apply 6 pints/A **Arsenal® herbicide** + 6 pints/A glyphosate + spray adjuvant. For best results, use 4 quarts/A MSO as an adjuvant. • **Ground foliar application** - Uniformly apply to ensure 100% coverage. • **Broadcast foliar control** - Apply aerially in a minimum of 2 passes at 10 gallons/A applied cross treatment. • **Spot treatment** - Use a 25% **Arsenal** + 25% solution of glyphosate + 1.25% MSO in water applied as a frill or stump treatment.
*Nutgrass Kili'p'opu	*Cyperus rotundus*	2 pints/A **Arsenal** + 1 quart/A MSO applied early postemergence
*Nutsedge	*Cyperus* spp.	2 to 3 pints/A postemergence to foliage or preemergence incorporated; nonincorporated preemergence applications will not control.
Phragmites Common reed	*Phragmites australis*	4 to 6 pints/A applied to actively growing green foliage after full leaf elongation. Ensure 100% coverage. If stand has a substantial amount of old stem tissue, mow or burn; allow to regrow to approximately 5 feet tall before treatment. Lower rates will control phragmites in the North; higher rates are needed in the South.
*Poison hemlock	*Conium maculatum*	2 pints/A **Arsenal** + 1 quart/A MSO applied preemergence to early postemergence to rosette before flowering
Purple loosestrife	*Lythrum salicaria*	1 pint/A applied to actively growing foliage
Reed canarygrass	*Phalaris arundinacea*	3 to 4 pints/A applied to actively growing foliage
Rose, swamp	*Rosa palustris*	2 to 3 pints/A applied to actively growing foliage
Russian olive	*Elaeagnus angustifolia*	2 to 4 pints/A (1% solution) applied to foliage
Saltcedar Tamarisk	*Tamarix* spp.	**Aerial application** - 2 quarts **Arsenal** + 0.25% v/v NIS applied to actively growing foliage during flowering. **Spot treatment** - Use 1% solution of **Arsenal** + 0.25% v/v NIS and spray to wet foliage. After application, wait at least 2 years before disturbing treated saltcedar. Earlier disturbance can reduce overall control.
Smartweed	*Polygonum* spp.	2 pints/A applied early postemergence
Sumac	*Rhus* spp.	2 to 3 pints/A applied to foliage
Swamp morningglory Kangkong Water spinach	*Ipomoea aquatica*	1 to 2 pints/A **Arsenal** + 1 quart/A MSO applied early postemergence
Torpedo grass	*Panicum repens*	4 pints/A (1.0 to 1.5% solution). Ensure good coverage to actively growing foliage.
*White top Hoary cress	*Cardaria draba*	1 to 2 pints/A applied in spring to foliage during flowering
Willow	*Salix* spp.	2 to 3 pints/A **Arsenal** applied to actively growing foliage. Ensure good coverage.

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Terrestrial Weed Control

In terrestrial sites, **Arsenal® herbicide** will provide preemergence or postemergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of **Arsenal**. For established biennials and perennials, postemergence applications of **Arsenal** will provide the best control.

The rates shown below refer to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low-volume spray solutions (see **Low-volume Foliar Application** section of **Ground Application**); low-volume applications may provide control of the target species with less **Arsenal** per acre than is shown for the broadcast treatments. Use **Arsenal** only in accordance with the specific use directions on this label and the leaflet label.

Use the relative sensitivity of the species listed following to determine the relative risk of nontarget plant injury if any of the species listed following are considered to be desirable within the area to be treated.

Resistant Biotypes. Naturally occurring biotypes (a plant within a given species that has a slightly different but distinct genetic makeup from other plants of the same species) of some weeds listed on this label may not be effectively controlled. If naturally occurring resistant biotypes are present in an area, tank mix **Arsenal** or apply sequentially with an appropriate registered herbicide having a different mode of action to ensure control.

Terrestrial Weeds Controlled

Common Name	Scientific Name	Growth Habit[2]
Grass Weeds		
Apply 2 to 3 pts/A[1]		
Annual bluegrass	*Poa annua*	A
Broadleaf signalgrass	*Brachiaria platyphylla*	A
Canada bluegrass	*Poa compressa*	P
Downy brome	*Bromus tectorum*	A
Fescue	*Festuca* spp.	A/P
Foxtail	*Setaria* spp.	A
Italian ryegrass	*Lolium multiflorum*	A
Johnsongrass[4]	*Sorghum halepense*	P
Kentucky bluegrass	*Poa pratensis*	P
Napier grass[5]	*Pennisetum purpureum*	P
Orchardgrass	*Dactylis glomerata*	P
Paragrass	*Brachiaria mutica*	P
Quackgrass	*Agropyron repens*	P

(continued)

Terrestrial Weeds Controlled *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Grass Weeds *(continued)*		
Apply 2 to 3 pts/A[1] *(continued)*		
Sandbur	*Cenchrus* spp.	A
Smooth brome	*Bromus inermis*	P
Vaseygrass	*Paspalum urvillei*	P
Wild oats	*Avena fatua*	A
Witchgrass	*Panicum capillare*	A
Apply 3 to 4 pts/A[1]		
Barnyardgrass	*Echinochloa crus-galli*	A
Beardgrass	*Andropogon* spp.	P
Bluegrass, annual	*Poa annua*	A
Bulrush[5]	*Scirpus validus*	P
Cheat	*Bromus secalinus*	A
Cogongrass	*Imperata cylindrica*	P
Crabgrass	*Digitaria* spp.	A
Crowfootgrass	*Dactyloctenium aegyptium*	A
Fall panicum	*Panicum dichotomiflorum*	A
Goosegrass	*Eleusine indica*	A
Itchgrass	*Rottboellia exaltata*	A
Lovegrass[4]	*Eragrostis* spp.	P
Maidencane[5]	*Panicum hemitomon*	A
Panicum, browntop	*Panicum fasciculatum*	A
Panicum, Texas	*Panicum texanum*	A
Prairie threeawn	*Aristida oligantha*	P
Sandbur, field	*Cenchrus incertus*	A
Signalgrass	*Brachiaria platyphylla*	A
Wild barley	*Hordeum* spp.	A
Woolly cupgrass	*Eriochloa villosa*	A
Apply 4 to 6 pts/A[1]		
Bahiagrass	*Paspalum notatum*	P
Bermudagrass[3, 4]	*Cynodon dactylon*	P
Big bluestem	*Andropogon gerardii*	P
Dallisgrass	*Paspalum dilatatum*	P
Feathertop	*Pennisetum villosum*	P
Guineagrass	*Panicum maximum*	P
Saltgrass[3]	*Distichlis stricta*	P
Sand dropseed	*Sporobolus cryptandrus*	P
Sprangletop	*Leptochloa* spp.	A
Timothy	*Phleum pratense*	P
Wirestem muhly	*Muhlenbergia frondosa*	P

[1] Use higher rate where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use a minimum of 75 GPA.
[4] Use higher labeled rates.
[5] Use not permitted in California unless otherwise directed by supplemental labeling.

Terrestrial Weeds Controlled *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Broadleaf Weeds		
Apply 2 to 3 pts/A[1]		
Burdock	*Arctium* spp.	B
Carolina geranium	*Geranium carolinianum*	A
Carpetweed	*Mollugo verticillata*	A
Clover	*Trifolium* spp.	A/P
Common chickweed	*Stellaria media*	A
Common ragweed	*Ambrosia artemisiifolia*	A
Dandelion	*Taraxacum officinale*	P
Dogfennel	*Eupatorium capillifolium*	A
Filaree	*Erodium* spp.	A
Fleabane	*Erigeron* spp.	A
Hoary vervain	*Verbena stricta*	P
Indian mustard	*Brassica juncea*	A
Kochia	*Kochia scoparia*	A
Lambsquarters	*Chenopodium album*	A
Lespedeza[3]	*Lespedeza* spp.	P
Miner's lettuce	*Montia perfoliata*	A
Mullein	*Verbascum* spp.	B
Nettleleaf goosefoot	*Chenopodium murale*	A
Oxeye daisy	*Chrysanthemum leucanthemum*	P
Pepperweed	*Lepidium* spp.	A
Pigweed	*Amaranthus* spp.	A
Puncturevine	*Tribulus terrestris*	A
Russian thistle	*Salsola kali*	A
Smartweed	*Polygonum* spp.	A/P
Sorrell	*Rumex* spp.	P
Sunflower	*Helianthus* spp.	A
Sweet clover	*Melilotus* spp.	A/B
Tansymustard	*Descurainia pinnata*	A
Western ragweed	*Ambrosia psilostachya*	P
Wild carrot	*Daucus carota*	B
Wild lettuce	*Lactuca* spp.	A/B
Wild parsnip	*Pastinaca sativa*	B
Wild turnip	*Brassica campestris*	B
Woollyleaf bursage	*Franseria tomentosa*	P
Yellow woodsorrel	*Oxalis stricta*	P

(continued)

Terrestrial Weeds Controlled *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Broadleaf Weeds *(continued)*		
Apply 3 to 4 pts/A[1]		
Broom snakeweed[4]	*Gutierrezia sarothrae*	P
Bull thistle	*Cirsium vulgare*	B
Burclover	*Medicago* spp.	A
Chickweed, mouseear	*Cerastium vulgatum*	A
Clover, hop	*Trifolium procumbens*	A
Cocklebur	*Xanthium strumarium*	A
Cudweed	*Gnaphalium* spp.	A
Desert camelthorn	*Alhagi pseudalhagi*	P
Dock	*Rumex* spp.	P
Fiddleneck	*Amsinckia intermedia*	A
Goldenrod	*Solidago* spp.	P
Henbit	*Lamium amplexicaule*	A
Knotweed, prostrate	*Polygonum aviculare*	A/P
Pokeweed	*Phytolacca americana*	P
Purslane	*Portulaca* spp.	A
Pusley, Florida	*Richardia scabra*	A
Rocket, London	*Sisymbrium irio*	A
Rush skeletonweed[4]	*Chondrilla juncea*	B
Saltbush	*Atriplex* spp.	A
Shepherdspurse	*Capsella bursa-pastoris*	A
Spurge, annual	*Euphorbia* spp.	A
Stinging nettle[4]	*Urtica dioica*	P
Velvetleaf	*Abutilon theophrasti*	A
Yellow starthistle	*Centaurea solstitialis*	A
Apply 4 to 6 pts/A[1]		
Arrowwood	*Pluchea sericea*	A
Canada thistle	*Cirsium arvense*	P
Giant ragweed	*Ambrosia trifida*	A
Gray rabbitbrush	*Chrysothamnus nauseosus*	P
Little mallow	*Malva parviflora*	B
Milkweed	*Asclepias* spp.	P
Primrose	*Oenothera kunthiana*	P
Silverleaf nightshade	*Solanum elaeagnifolium*	P
Sowthistle	*Sonchus* spp.	A
Texas thistle	*Cirsium texanum*	P

[1] Use higher rate where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use not permitted in California unless otherwise directed by supplemental labeling.
[4] For best results, early postemergence applications are required.

Terrestrial Weeds Controlled *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Vines and Brambles		
Apply 1 pt/A		
Field bindweed	*Convolvulus arvensis*	P
Hedge bindweed	*Calystegia sepium*	A
Apply 2 to 3 pts/A[1]		
Wild buckwheat	*Polygonum convolvulus*	P
Apply 3 to 4 pts/A[1]		
Greenbriar	*Smilax* spp.	P
Honeysuckle[3]	*Lonicera* spp.	P
Morningglory	*Ipomoea* spp.	A/P
Poison ivy	*Rhus radicans*	P
Redvine	*Brunnichia cirrhosa*	P
Wild rose[3] including:	*Rosa* spp.	P
Multiflora rose	*Rosa multiflora*	P
Macartney rose	*Rosa bracteata*	P
Apply 4 to 6 pts/A[1]		
Trumpetcreeper	*Campsis radicans*	P
Virginia creeper	*Parthenocissus quinquefolia*	P
Wild grape	*Vitis* spp.	P

[1] Use higher rate where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use higher labeled rates.

Common Name	Scientific Name	Growth Habit[2]
Brush Species		
Apply 2 to 4 pts/A[1]		
Brazilian peppertree	*Schinus terebinthifolius*	P
Chinese tallow tree Popcorn tree	*Sapium sebiferum*	P
Russian olive	*Elaeagnus angustifolia*	P
Sumac	*Rhus* spp.	P
Willow	*Salix* spp.	P
Apply 4 to 6 pts/A[1]		
Alder	*Alnus* spp.	P
American beech	*Fagus grandifolia*	P
Ash[3]	*Fraxinus* spp.	P
Aspen	*Populus* spp.	P
Autumn olive	*Elaeagnus umbellata*	P
Bald cypress	*Taxodium distichum*	P
Bigleaf maple	*Acer macrophyllum*	P
Birch[3]	*Betula* spp.	P
Black gum[4]	*Nyssa sylvatica*	P
Black oak	*Quercus kelloggii*	P
Boxelder	*Acer negundo*	P
Ceanothis	*Ceanothis* spp.	P
Cherry[3, 4]	*Prunus* spp.	P

(continued)

Terrestrial Weeds Controlled *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Brush Species *(continued)*		
Apply 4 to 6 pts/A[1]		
Chinaberry	*Melia azedarach*	P
Chinquapin	*Castanopsis chrysophylla*	P
Cottonwood	*Populus trichocarpa* *P. deltoides*	P
Cypress	*Taxodium* spp.	P
Dogwood[3]	*Cornus* spp.	P
Elm[5]	*Ulmus* spp.	P
Eucalyptus	*Eucalyptus* spp.	P
Hawthorn	*Crataegus* spp.	P
Hickory[3]	*Carya* spp.	P
Huckleberry	*Gaylussacia* spp.	P
Lyonia spp. including:		
Fetterbush	*Lyonia lucida*	
Staggerbush	*Lyonia mariana*	P
Madrone	*Arbutus menziesii*	P
Maple	*Acer* spp.	P
Melaleuca	*Melaleuca quinquenervia*	P
Mulberry[3, 6]	*Morus* spp.	P
Oak[7]	*Quercus* spp.	P
Persimmon[4]	*Diospyros virginiana*	P
Poison oak	*Rhus diversiloba*	P
Poplar	*Populus* spp.	P
Privet	*Ligustrum vulgare*	P
Red alder	*Alnus rubra*	P
Red maple	*Acer rubrum*	P
Saltcedar	*Tamarix pentandra*	P
Sassafras	*Sassafras albidum*	P
Sourwood[3]	*Oxydendrum arboreum*	P
Sweetgum	*Liquidambar styraciflua*	P
Sycamore	*Platanus occidentalis*	P
Tanoak[3]	*Lithocarpus densiflorus*	P
Titi[8]	*Cyrilla racemiflora*	P
Tree of heaven	*Ailanthus altissima*	P
Vaccinium spp. including:		
Blueberry	*Vaccinium* spp.	
Sparkleberry	*Vaccinium arboreum*	P
Water willow[9]	*Justicia americana*	P
Yellow poplar[3]	*Liriodendron tulipifera*	P

[1] Use higher rate where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use higher labeled rates.
[4] Best control with applications before formation of fall leaf color
[5] Tank mix with glyphosate
[6] Degree of control may be species dependent.
[7] For water oak (*Quercus nigra*), laurel oak (*Q. laurifloria*), willow oak (*Q. phellos*), and live oak (*Q. virginiana*), use higher labeled rates.
[8] Suppression only
[9] **Use not permitted in California unless otherwise directed by supplemental labeling.**

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. 1108

000241-00346.20120911b.**NVA 2012-04-104-0184**
Based on: NVA 2011-04-104-0062
Supersedes: NVA 2011-04-104-0115

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

The Chemical Company

BASF
The Chemical Company

Safety data sheet
ARSENAL®

1. Substance/preparation and company identification

Company
BASF CORPORATION
100 Campus Drive
Florham Park, NJ 07932, USA

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP

Substance number:	000000063383
Molecular formula:	C(13) H(15) N(3) O(3). C(3) H(9) N
Molecular weight:	320.4 g/mol
Chemical family:	imidazole derivative
Synonyms:	Isopropylamine salt of imazapyr

2. Composition/information on ingredients

CAS Number	Content (W/W)	Chemical name
	71.3 %	Proprietary ingredients
81510-83-0	28.7 %	3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo- 1H-imidazol-2-yl]-, compd. with 2-propanamine (1:1)

3. Hazard identification

Emergency overview

CAUTION: KEEP OUT OF REACH OF CHILDREN.
Avoid contact with the skin, eyes and clothing.
Avoid inhalation of mists/vapours.

Potential health effects

See Product Label for additional precautionary statements.

Primary routes of exposure
Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

Acute toxicity:
Relatively nontoxic after single ingestion. Slightly toxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

Irritation:
May cause slight but temporary irritation to the eyes. May cause slight irritation to the skin.

Sensitization:
Skin sensitizing effects were not observed in animal studies.

Repeated dose toxicity:
No other known chronic effects.

Potential environmental effects

Aquatic toxicity:
There is a high probability that the product is not acutely harmful to fish.
There is a high probability that the product is not acutely harmful to aquatic invertebrates.
Acutely harmful for aquatic plants.

Terrestrial toxicity:
With high probability not acutely harmful to terrestrial organisms.

4. First-aid measures

General advice:
First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary.

If on skin:
Rinse skin immediately with plenty of water for 15 - 20 minutes.

If in eyes:
Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

If swallowed:
Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions.

Note to physician

Antidote:	No known specific antidote.
Treatment:	Treat symptomatically.

5. Fire-fighting measures

Flash point:	> 210 °F
Self-ignition temperature:	93 °C

Suitable extinguishing media:
foam, dry extinguishing media, carbon dioxide, water spray

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons,
If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released if the product is involved in a fire.

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

6. Accidental release measures

Personal precautions:
Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental precautions:
Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

Cleanup:
Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

7. Handling and storage

Handling

General advice:
RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/ product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:
The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

Storage

General advice:
Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

Storage incompatibility:
General: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

Temperature tolerance

Protect from temperatures above: 40 °C
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

8. Exposure controls and personal protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

Advice on system design:
Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

Personal protective equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and vapours. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

Eye protection:
Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

9. Physical and chemical properties

Form:	liquid	
Odour:	ammonia-like, faint odour	
Colour:	blue, clear	
pH value:	6.6 - 7.2	
Density:	1.04 - 1.09 g/ml	
Relative density:	1.04 - 1.09	
Partitioning coefficient n-octanol/water (log Pow):		Not applicable
Solubility in water:		miscible

10. Stability and reactivity

Conditions to avoid:
Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme temperatures. Avoid prolonged exposure to extreme heat. Avoid contamination. Avoid electro-static discharge. Avoid prolonged storage.

Substances to avoid:
oxidizing agents, reducing agents

Hazardous reactions:
The product is chemically stable.

Decomposition products:
Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

Thermal decomposition:
Possible thermal decomposition products:
carbon monoxide, carbon dioxide, nitrogen oxide
Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released. If product is heated above decomposition temperature hazardous fumes may be released.

Corrosion to metals:
Corrosive effect on: mild steel brass

11. Toxicological information

Acute toxicity

Oral:
LD50/rat/male/female: > 5,000 mg/kg

Inhalation:
LC50/rat: > 4.62 mg/l / 4 h

Dermal:
LD50/rabbit/male/female: > 2,000 mg/kg

Skin irritation:
rabbit: mildly irritating (Primary skin irritation test)

Eye irritation :
rabbit: non-irritant

Sensitization:
Skin sensitization test/guinea pig: Skin sensitizing effects were not observed in animal studies.

Genetic toxicity:
Information on: imazapyr
No mutagenic effect was found in various tests with microorganisms and mammals.

Carcinogenicity:
Information on: imazapyr
In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.

Reproductive toxicity:
Information on: imazapyr
The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity/teratogenicity:
Information on: imazapyr
No indications of a developmental toxic / teratogenic effect were seen in animal studies.
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12. Ecological information

Information on: imazapyr

Environmental toxicity

Information on: imazapyr
Acute and prolonged toxicity to fish:
Rainbow trout/LC50 (96 h): > 100 mg/l

Information on: imazapyr
Acute toxicity to aquatic invertebrates:
Daphnia magna/EC50 (48 h): > 100 mg/l

Information on: imazapyr
Toxicity to aquatic plants:
green algae/EC50: 71 mg/l

Information on: imazapyr
Other terrestrial non-mammals:
mallard duck/LC50: > 5,000 ppm
With high probability not acutely harmful to terrestrial organisms.
Honey bee/LD50: > 100 ug/bee
With high probability not acutely harmful to terrestrial organisms.

Other ecotoxicological advice:
The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

13. Disposal considerations

Waste disposal of substance:
Pesticide wastes are regulated.
Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law.
If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container disposal:
Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: This product is not regulated by RCRA.

14. Transport information

Reference Bill of Lading

15. Regulatory information

Federal Regulations

Registration status:
TSCA, US released / exempt

OSHA hazard category: Chronic target organ effects reported, ACGIH TLV established

SARA hazard categories (EPCRA 311/312): Acute

State regulations

CA Prop. 65:
There are no listed chemicals in this product.

16. Other information

Refer to product label for EPA registration number.

Recommended use: herbicide

Local contact information
Product Stewardship
919 547-2000

GROUP 3 HERBICIDE

Surflan®

AS SPECIALTY HERBICIDE

A selective preemergence surface-applied herbicide for control of annual grasses and many broadleaf weeds in: • Landscape Ornamentals • Container Grown Ornamentals • Field Grown Ornamentals • Drainage Areas Under Shadehouse Benches • Ornamental Bulbs • Ground Covers/ Perennials • Christmas Tree Plantations • Non-bearing fruit and nut trees and non-bearing vineyards • Noncropland and Industrial Sites • Established Warm Season Turf (including Bahiagrass, Bermudagrass, Buffalograss, Centipedegrass, St. Augustinegrass and Zoysiagrass) • Tall Fescue (warm season areas)

ACTIVE INGREDIENT:	**BY WT.**
Oryzalin: 3,5-dinitro-N^4N^4-dipropylsulfanilamide	40.4%
OTHER INGREDIENTS	59.6%
TOTAL	100.0%

Contains 4.0 pounds of active ingredient per gallon.

EPA Reg. No. 70506-44

KEEP OUT OF REACH OF CHILDREN

CAUTION PRECAUCION

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.)

FIRST AID

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact the Rocky Mountain Poison Control Center at 1-866-673-6671 for emergency medical treatment information.

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call CHEMTREC 1-800-424-9300.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Conditions of Sale and Limitation of Warranty and Liability at end of label booklet. If terms are unacceptable, return at once unopened.**

For emergency medical assistance, call the Rocky Mountain Poison Control Center at 1-866-673-6671.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Shake Well Before Using.

UPI **United Phosphorus, Inc.**
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406 • 1-800-438-6071

Net Contents: _____ Gallons

Table of Contents

Precautionary Statements
Hazards to Humans and Domestic Animals

CAUTION PRECAUCION

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.)

Causes Eye Irritation • Prolonged or Frequently Repeated Contact May Cause Allergic Reactions In Some Individuals

Avoid contact with eyes or clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks
- Mixers and loaders must wear a chemical-resistant apron in addition to other PPE.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls Statements

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

User Safety Recommendations

Users should:

- 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

This pesticide is toxic to fish. 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 washwaters. Cover or incorporate spills.

Directions for Use

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

Read all Directions for Use carefully before applying.

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

Agricultural Use Requirements

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours. **Exception:** If the product is soil-injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

Workers may enter treated areas without required PPE during the reentry interval following 1/2 to 1 inch of rainfall or irrigation, if they are performing tasks that do not involve contact with the soil subsurface; otherwise, 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
- 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: Keep all persons, children and pets out of treated area until sprays have dried.

Storage and Disposal

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

Pesticide Storage: Store in original container only. In case of leak or spill, use absorbent materials to contain liquids and dispose of 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.

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying.

[for containers less than or equal to 5 gallons] 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.

[for containers greater than 5 gallons] Triple rinse or pressure rinse as follows:

Triple rinse: 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. Turn the container over on its 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: 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 flow begins to drip.

[all sizes] Offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General Information

Surflan AS herbicide is a preemergence surface-applied product for the control of many annual grasses and broadleaf weeds in ornamental plantings, bulbs, ground covers/perennials, established warm-season turfgrass, Christmas tree plantations, non-bearing trees and vines, and noncropland and industrial sites.

Surflan AS is orange in color and may cause temporary discoloration of sprayed surfaces. If this discoloration is undesirable, it may be altered by using a commercially available colorant such as Blazon or removed by spraying surface with water or washing with an industrial cleaner immediately after application. Surflan AS may also be applied with mulch colorants, such as Mulch Magic or Nu-Mulch.

Treatment of Plant Species Not Listed on the Label for Surflan AS

Users who wish to use Surflan AS on plant species not recommended on this label may determine the suitability for use by treating a small number of such plants at a recommended rate. Prior to treatment of larger areas, the treated plants should be observed for any sign of herbicidal injury during 30-60 days of normal growing conditions to determine if the treatment is non-injurious to the target plant species. The user assumes responsibility for any plant damage or other liability resulting from use of Surflan AS on plant species not recommended on this label.

Aerial Application: Do not aerially apply this product.

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

For orchard crops, including citrus, pome fruits, stone fruits, and tree nuts, apply product only as a strip treatment in the tree rows; do not apply to row middles or drive rows.

Do not graze or feed forage from treated areas to livestock.

Precaution: Avoid spray drift to non-target areas when applying Surflan AS. Spray drift may result in reduced emergence of non-target plants adjacent to the treated area. Poor weed control may result if directions are not followed. Over-application may result in crop injury or excessive soil residue.

Application

Soil Preparation

Surflan AS controls weeds growing from seed. Surflan AS will not control emerged weeds. Surflan AS does not control established weeds, weeds growing from stolons, rhizomes, or root pieces. Therefore, areas to be treated should be free of emerged weeds. Weed residues, prunings, and trash should be thoroughly mixed into the soil or removed prior to treatment. In field applications, the soil should be in good tilth and free of clods at the time of application.

Ground Application: Apply Surflan AS as a directed spray to the soil surface or over the top of plants. Use only a properly calibrated, low-pressure, herbicide sprayer that will apply the spray uniformly. Use screens no finer than 50 mesh in nozzles and in-line strainers. Apply the appropriate rate of Surflan AS, as outlined in "Crop Specific Use Directions" section of this label. In all cases, use sufficient water volume to obtain uniform coverage and deliver the desired rate of Surflan AS to the treated area. The volume of water used is not critical, as long as the desired rate of Surflan AS is delivered uniformly across the area treated. When calibrating, determine the volume of water delivered by the sprayer to a given area (1,000 sq ft, 1 acre, etc.). Then mix the desired rate of Surflan AS in the amount of water required to cover the entire area to be treated. As the amount of water used (spray volume) decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily to ensure proper calibration and uniform application. Maintain continuous agitation from mixing through application. Avoid spray pattern skips and overlaps that may result in incomplete coverage or over-application.

Hand Held or Backpack Sprayer Application: The amount of water used to apply Surflan AS herbicide is not critical, but should be sufficient for uniform coverage of the target area. Calibrate by determining the volume of water required to treat 1000 square feet. Use this calibration volume to determine the amount of water and Surflan AS herbicide needed to treat the target area (see the following calibration example). **Note:** Sprayer calibration (volume of spray needed to treat 1,000 square feet) will vary with each individual operator.

Steps in Calibration:

1. Mark an area of 1,000 square feet (i.e. 20 by 50 feet, or 25 by 40 feet).
2. Place the sprayer on a level surface and add water noting the final level of water in the spray tank.
3. Spray the marked area with a sufficient volume of water to provide uniform coverage. Refill the sprayer to the same level as before measuring the amount of water added. The measured water added to the sprayer is the volume needed to cover 1,000 square feet.
4. Determine the application rate (fl oz/1000 sq ft) for Surflan AS from the "Crop Specific Use Directions" section of this label.
5. To each volume of water used, as measured in step 3, add the amount of Surflan AS as determined in step 4.

Example: If the sprayer used 2 gallons of water to cover 1,000 square feet and the desired application rate of Surflan AS is 3 fluid oz/1,000 square feet, then you would add 3 fluid ounces of Surflan AS to every 2 gallons of water to be used.

Mixing Directions

Shake Well Before Using

Precaution: Do not allow the spray mixture to siphon back into water source.

Surflan AS - Alone

Make sure spray tank is clean and use only clean water. Fill spray tank 1/2 - 3/4 full. Start agitation and add the required amount of Surflan AS. Continue agitation and finish filling the spray tank. Maintain continuous agitation until application is completed.

Surflan AS - Tank Mix Combinations

Prior to mixing, read and carefully follow all label instructions and precautions for each product added to the tank mixture. Vigorous, continuous agitation is required for all tank mixes of Surflan AS. Sparger pipe agitators generally provide the best agitation in spray tanks.

Mixing Order: Fill the tank 3/4 full with clean water. Start agitation and add different formulation types in the order indicated below, allowing time for complete mixing and dispersion after addition of each product. Allow extra mixing and dispersion time for dry flowable products.

Add different formulation types in the following order: dry flowables (DF); wettable powders (WP); Surflan AS and other aqueous suspensions (AS), flowables (F), and liquids (L); solutions (S); and emulsifiable concentrates (EC).

Continue agitation and finish filling the spray tank with clean water. Maintain agitation until application is completed. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be completely resuspended before spraying is continued. A sparger agitator is particularly useful for this purpose.

Premixing: When tank mixing, initial mixing and dispersion of certain dry flowable or wettable powder products may be improved by premixing with water (slurrying). Adding the slurried material to the spray tank through a wetting screen of 20 or 35 mesh will help assure good initial dispersion.

Equipment Cleaning

If a buildup of material occurs on the walls of the spray tank, it should be removed between fillings by washing with soap and water and rinsing thoroughly. Tanks, lines, screens, and nozzles should be cleaned thoroughly after each use.

Activation and Cultivation

Surflan AS will remain stable on the soil surface up to 21 days following application. In the absence of timely rainfall, irrigation can be used to activate Surflan AS. A minimum of one-half (1/2) inch of rain or its equivalent in sprinkler irrigation is necessary to activate Surflan AS. If weeds begin to emerge due to lack of rainfall or irrigation, shallow cultivate 1-2 inches deep to destroy existing weeds, or remove them by hand. Shallow cultivation to a depth of 1-2 inches will enhance herbicidal effectiveness. Erratic weed control may result if Surflan AS is not activated by rainfall, irrigation, or cultivation within 21 days of application, or existing weeds have not been removed.

Weeds Controlled by Surflan AS

Annual Grasses:

Common Name	Scientific Name
barley, little	*Hordeum pusillum*
barnyardgrass (watergrass)	*Echinochloa crus-galli*
crabgrass, large	*Digitaria sanguinalis*
crabgrass, smooth	*Digitaria ischaemum*
crowfootgrass	*Dactyloctenium aegyptium*
cupgrass, southwestern	*Eriochloa gracilis*
foxtail, bristlegrass	*Setaria magna*
foxtail, giant	*Setaria faberi*
foxtail, green (pigeongrass)	*Setaria viridis*
foxtail, robust	*Setaria robusta*
foxtail, yellow	*Setaria glauca*
goosegrass (silver crabgrass)	*Eleusine indica*
Johnsongrass (seedling only)	*Sorghum halepense*
junglerice	*Echinochloa colonum*
lovegrass, Mexican	*Eragrostis mexicana*
lovegrass, orcutt	*Eragrostis orcuttiana*
oat, wild	*Avena fatua*
panicum, browntop	*Panicum fasciculatum*
panicum, fall (spreading panicgrass)	*Panicum dichotomiflorum*
panicum, Texas (buffalograss) (Coloradograss)	*Panicum texanum*
ryegrass, Italian	*Cenchrus incertus*
signalgrass (Brachiaria)	*Brachiaria* spp.
sprangletop, red	*Leptochloa filiformis*
witchgrass	*Panicum capillare*

Broadleaf Weeds:

Common Name	Scientific Name
bittercress	*Cardamine oligosperma*
carpetweed	*Mollugo verticillata*
chickweed, common	*Stellaria media*
fiddleneck, coast	*Amsinckia intermedia*
filaree, redstem	*Erodium cicutarium*
filaree, whitestem	*Erodium moschatum*
groundsel, common	*Senecio vulgaris*
henbit	*Lamium amplexicaule*
knotweed, prostrate	*Polygonum aviculare*
lambsquarters	*Chenopodium album*
pigweed, prostrate	*Amaranthus blitoides*
pigweed, redroot	*Amaranthus retroflexus*
pigweed, spring	*Amaranthus hybridus*
pigweed, tumble	*Amaranthus albus*
puncturevine	*Tribulus terrestris*
purslane, common	*Portulaca oleracea*
pusley, Florida (Florida purslane) (Mexican clover) (pusley)	*Richardia scabra*
rocket, London	*Sisymbrium irio*
rockpurslane, desert	*Calandrinia ciliata*
shepherdspurse	*Capsella bursa-pastoris*
spurge, prostrate	*Euphorbia humistrata*
woodsorrel, yellow	*Oxalis stricta*

Weeds Suppressed by Surflan AS

Control of the following weeds may be erratic, ranging from poor to excellent, depending upon soil temperature, time of germination, depth of seed in the soil, and amount and timing of soil moisture:

Common Name	Scientific Name
horseweed	*Conyza canadensis*
ladysthumb	*Polygonum persicaria*
lettuce, prickly	*Lactuca serriola*
mallow, common	*Malva neglecta*
milkweed, climbing	*Sarcostemma cynanchoides*
morningglory	*Ipomoea* spp.
mustard, black	*Brassica nigra*
mustard, wild	*Brassica kaber*
nightshade, black	*Solanum nigrum*
ragweed, common	*Ambrosia artemisiifolia*
smartweed	*Polygonum pensylvanicum*
sowthistle, annual	*Sonchus oleraceus*
spurge, spotted	*Euphorbia maculata*
teaweed (prickly sida)	*Sida spinosa*
velvetleaf	*Abutilon theophrasti*
wheat, volunteer	*Triticum* spp.

Crop Specific Use Directions

Ornamental Plantings

Surflan AS is recommended for use on certain landscape container- and field-grown established ornamental plants including: trees, shrubs, ground covers/perennials, flowers, non-bearing fruit and nut trees, non-bearing vineyards; and in the production of ornamental bulbs (See "Ornamental Bulbs" section for special use directions).

Broadcast Application Rates

Labeled Use Site	Length of Control	Surflan AS (qt/ acre)	Surflan AS (fl oz/ 1000 sq ft)	Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
Landscape Ornamentals	2 - 4 months	2	1.5	2	8
	3 - 6 months	3	2.2	4	12
	4 - 8 months	4	3	4	12
Field-grown and container-grown ornamentals	2 - 4 months	2	1.5	3	8
	3 - 6 months	3	2.2	3	9
	4 - 8 months	4	3	3	12

Tank Mix Combinations

Tank mix combinations of Surflan AS plus glyphosate, and many other labeled herbicides may be used to control undesirable vegetation in ornamental areas. Surflan AS may also be tank mixed with Gallery herbicide and applied preemergence to broaden the spectrum of broadleaf weed control in ornamental areas. Applied as directed, these tank mixes of Surflan AS will provide control of susceptible weed species listed on the respective labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

Surflan AS Plus glyphosate: Tank mix combinations of Surflan AS plus glyphosate are recommended to control existing undesirable vegetation. Applied as directed, Surflan AS plus glyphosate will provide postemergence control of susceptible weed species listed on the label for glyphosate and residual preemergence control of susceptible weed species listed on the label for Surflan AS. Refer to the label for glyphosate for specific use directions, precautions, and limitations before use.

Precautions: Do not apply sprays containing glyphosate over the top of ornamental plants.

Extreme care must be exercised to prevent sprays containing glyphosate from coming in contact with foliage and stems of turfgrasses, trees, shrubs, or other desirable vegetation since severe damage or death may result. If spraying with glyphosate in areas adjacent to desirable plants, use a shield to prevent spray from contacting foliage and stems of desirable plants.

Special Use Precautions:

Apply only to established plants that have been transplanted into their growing location for a sufficient period of time to allow the soil to be firmly settled around the roots from packing and rainfall or irrigation.

Rooted liners should be removed from their original growing containers and placed in new containers at least two weeks prior to treatment or injury may occur.

To avoid possible injury, do not apply Surflan AS to:

- Nursery, forest, or Christmas tree: seedling beds, cutting beds, or transplant beds.
- Unrooted liners or cuttings that have been planted in pots for the first time.
- Pots less than four inches wide.
- Ground covers until they are established and well rooted.
- Ornamental plantings where there is likelihood of runoff onto lawn areas.
- Areas containing dichondra or cool season turfgrass species.

On container grown ornamentals where weed seed germination continues for extended periods of time, do not make repeat applications of Surflan AS for at least 90 days or crop injury may occur.

Applications of Surflan AS over the top of plants with newly forming buds may cause injury. In this situation a directed spray is recommended.

For soils treated with Surflan AS during the previous season, plant only the ornamental species listed on this label or injury may occur.

Ice Plant: When establishing unrooted ice plant on coarse-textured soils in landscape plantings, do not exceed the 2 quart per acre rate of Surflan AS or crop injury may occur.

Note: Injury on the following plant species has been observed following applications of Surflan AS and use is not recommended:

Deutzia gracilis (slender deutzia)

Pseudotsuga menziesii (Douglas-fir)

Thuja occidentalis 'Techny' (Techny arborvitae)

Tsuga canadensis (eastern hemlock)

Begonia spp. (begonia)

Coleus hybridus (coleus)

Surflan AS May be Used on the Following Established Plant Species: (Note: Limitations on recommended treatment methods).

Trees

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Abies balsamea	Fir, balsam	F
Abies concolor	Fir, white	F
Abies fraseri	Fir, fraser	F
Abies grandis	Fir, grand	F
Abies veitchi	Fir, Veitch	F
Abies lasiocarpa	Fir, alpine	F
Abutilon hybridum	Albus-flowering maple	F
	Luteus-flowering maple	F
	Roseus-flowering maple	F
	Tangerine-flowering maple	F
	Vesuvius red-flowering maple	F
Acer gimmala	Flame maple	F
Acer rubrum	Red sunset maple	F
Acer saccharinum	Silver maple	F
Acer spp.	Maple	F
Alsophila australis	Australian tree fern	C,F
Areacastrum romanzoffianum	Queen palm	F
Betula nigra	Birch, river	F
Betula papyrifera	Paper birch	F
Betula pendula	Birch, white	F

Trees (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Bucida buceras	Black olive	F
Carya spp.	Pecan, ornamental	C,F
Cedrus, atlantica	Atlas cedar	C,F
Cedrus deodara	Deodar cedar	C,F
Ceratonia siliqua	Carob	F
Cercidium floridum	Palo Verde, blue	F
Cercis canadensis	Redbud	C,F
Chamaecyparis lawsoniana	Falsecypress, Lawson	F
Chamaecyparis obtusa	Filicoides-fernspray cypress	F
	Gracilis-slender Hinoki cypress	F
Chamaecyparis pisifera	Sawara-false cypress	F
	Squarrosa-moss cypress	F
Chamaedorea cataractarum	Cat Palm	F
Chamaedorea costaricana	Palm	F
Chamaedorea elegans	Parlor palm	F
Citrus spp.	Citrus, ornamental	C,F
Cornus florida	Dogwood, flowering	F
Cryptomeria japonica	Cryptomeria, Japanese	C,F
Cupaniopsis anacardioides	Carrot wood	F
Cupressus arizonica (glabra)	Cypress, Arizona	C,F
Cupressus glabra	Arizona cypress	C,F
Cupressocyparis leylandii	Leyland cypress	C,F
Cupressus sempervirens	Cypress, Italian	C,F
Dicksonia antarctica	Tasmanian tree fern	C,F
Elaeagnus angustifolia	Russian olive	C,F
Eucalyptus camaldulensis	Red gum eucalyptus	F
Eucalyptus cinerea	Eucalyptus, mealy	F
	Silver dollar eucalyptus	F
Eucalyptus nicholii	Eucalyptus, narrow-leaved	F
Eucalyptus sideroxylon	Eucalyptus, red ironbark	F
Ficus benjamina	Ficus	F
Fraxinus spp.	Ash	F
Ginkgo biloba	Ginkgo (Maidenhair tree)	C,F
Gleditsia triacanthos	Honey locust	F
Heteromeles arbutiflora	Toyon	F
Juniperus virginiana	Redcedar, Eastern	F
Koelreuteria paniculata	Goldenrain tree	F
Liquidambar styraciflua	Sweetgum, American	C,F
Magnolia spp.	Magnolia	F
Malus spp.	Crabapple	F
Morus alba	White mulberry	F
Picea abies	Pendula-weeping Norway spruce	F
	Repens-spreading Norway spruce	F
	Spruce, Norway	F
Picea englemanni	Spruce, Englemann	F
Picea glauca	Spruce, white	F
	Conica-dwarf Alberta spruce	F
Picea glauca conica	Dwarf Alberta spruce	F
Picea mariana	Spruce, black	F

Trees (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Picea pungens	Glauca-Colorado blue spruce	F
	Hoopsii-Hoop's blue spruce	F
	Koster-Koster blue spruce	F
	Spruce, Colorado	C,F
Pinus aristata	Bristlecone pine	F
Pinus canariensis	Canary Island pine	F
Pinus contorta	Shore pine, beach pine	F
Pinus eldarica	Eldarica pine	F
Pinus halepensis	Aleppo pine	C,F
Pinus radiata	Monterey pine	F
Pinus spp.	Pine	C,F
Pinus strobus	Eastern white pine	F
Pinus sylvestris	Scotch pine	F
Pinus thunbergiana	Japanese black pine	F
Platanus occidentalis	American sycamore	F
Platanus racemosa	California sycamore	F
Podocarpus spp.	Podocarpus	F
Populus deltoides	Cottonwood	F
	Cottonwood (grown for pulp)	F
Prunus caroliniana	Laurelcherry, Carolina	F
Prunus glandulosa	Dwarf flowering almond	C,F
Prunus laurocerasus	Laurelcherry, English	F
Prunus mahaleb	Cherry, Mahaleb	F
Prunus yedoensis	Yoshino flowering cherry	F
Pyrus communis	Pear	F
Quercus palustris	Pin oak	F
Quercus phellos	Willow oak	F
Quercus rubra	Red oak	C,F
Quercus spp.	Oak	C,F
Salix babylonica	Babylon weeping willow	F
	Corkscrew willow	F
Schinus molle	California pepper tree	F
Sequoia sempervirens	Redwood, coast	F
Sequoiadendron giganteum	Giant sequoia	F
Swietenia mahogani	Mahogany	F
Tabebuia caraiba	Yellow tab	F
Tilia cordata	Linden, little leaf	C,F
Ulmus parvifolia	Chinese elm	F
Umbellularia californica	California laurel	F
Washingtonia robusta	Mexican fan palm	F

Shrubs

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Abelia grandiflora	Glossy abelia	F
Acacia redolens	Acacia, prostrate	F
Agave americana	Century plant	F
Agave macroculmis	Agave	F

Shrubs (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Anisodontea hypomandarum	Cape mallow	C,F
Arctostaphylos stanfordiana	Manzanita, Stanford	F
Astilbe chinensis	Astilbe/false spirea	C,F
Baccharis pilularis	Coyotebush	F
Berberis thunbergii	Aurea-golden Japanese barberry	C,F
	Crimson pygmy barberry	C,F
	Atropurea-redleaf Japanese barberry	C,F
	Barberry, Japanese	C,F
Bougainvillea spp.	Barbara Karst	F
	California gold	F
	Scarlet O'Hara	F
	Texas dawn	F
Buddleia davidii	Butterfly bush	C,F
Buxus microphylla	Littleleaf boxwood	F
Buxus microphylla japonica	Boxwood, Japanese	C,F
Buxus sempervirens	Boxwood, common	C,F
Callistemon citrinus	Bottlebrush, lemon	C,F
Cassia artemisioides	Cassia, feathery	F
Ceanothus americanus	Jerseytea, redroot	C,F
Ceanothus spp.	Wild lilac	C,F
Chaenomeles japonica	Flowering quince	C,F
Chamaecyparis obtusa	Kosteri cypress	F
	Nana-dwarf Hinoki cypress	F
	Torulosa cypress	F
Chamaecyparis pisifera	Squarrosa Minima cypress	F
Chamaecyparis pisifera spp.	Filifera-thread cypress	F
Chrysalidocarpus lutescens	Areca palm	F
Clethra	Summersweet	C,F
Cleyera japonica	Cleyera, Japanese	C,F
Coleonema pulchrum	Pink breath of heaven	C,F
Cornus alba	Sibirica-Siberian dogwood	F
Cornus kousa	Dogwood, kousa	C,F
Cornus stolonifera	Flaviramea-yellowtwig dogwood	F
Cotoneaster adpressus	Praecox-early cotoneaster	F
Cotoneaster apiculatus	Cotoneaster, cranberry	C,F
Cotoneaster buxifolius	Cotoneaster, brightbead	F
Cotoneaster congestus	Cotoneaster, Pyrenees	F
Cotoneaster dammeri	Cotoneaster, bearberry	C,F
Cotoneaster himalayan	Himalayan cotoneaster	F
Cotoneaster horizontalis	Cotoneaster, rock	C,F
Cotoneaster lacteus	Cotoneaster, parney	C,F
Cotoneaster microphyllus	Cotoneaster, rockspray	F
Cotoneaster salicifolia	Willowleaf cotoneaster	C,F
Cytisus praecox	Hollandia-warminster broom	F
Cytisus scoparius	Lena-Scotch broom	F
Dasylirion wheeleri	Sotol, desert spoon	F
Deutzia crenata	Nakiana-dwarf deutzia	F
Dodonaea viscosa	Hopseedbush, clammy	F
	Hopseed bush	F
Escallonia exoniensis	Escallonia	C,F

Shrubs (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Euonymus alata	Euonymus, winged	F
Euonymus fortunei	Canadale gold euonymus	C,F
	Emerald'n gold euonymus	C,F
	Euonymus, stringybark	C,F
	Wintercreeper	C,F
Euonymus japonica	Euonymus, evergreen	C,F
	Silver king euonymus	F
Euonymus kiatschovica	Spreading euonymus	F
Euonymus vegetus	Bigleaf wintercreeper	C,F
Fatshedera lizei	Fatshedera	C,F
Fatsia japonica	Japanese aralia	C,F
Felicia amelloides	Blue marguerite	C,F
Forsythia intermedia	Forsythia, border	F
Gardenia jasminoides	Gardenia	C,F
Genista pilosa	Woadwaxen	F
Hibiscus rosa-sinesis	Ross Estey-hibiscus	F
	Hibiscus, Chinese	F
Hibiscus syriacus	Rose of Sharon, Red Bird	F
	Rose of Sharon, Red Heart	F
	Rose of Sharon, Woodbridge	F
	Rose of Sharon, (Shrubalthea)	F
Hydrangea macrophylla	Hydrangea, French	C,F
Hydrangea quercifolia	Hydrangea, Oakleaf	C,F
Ilex aquifolium	Balkans holly	F
	Gold coast holly	F
	Holly, English	F
Ilex aquipernyi	San Jose holly	C,F
Ilex cornuta	Dwarf Burford holly	C,F
	Holly, Chinese	C,F
Ilex crenata	Compacta-dwarf Japanese holly	C,F
	Convexa holly	C,F
	Helleri-Heller's Japanese holly	C,F
	Holly, Japanese	C,F
Ilex glabra	Nordica-inkberry holly	F
Ilex meserveae	Blue boy holly	F
	Blue girl holly	F
	Ebony magic holly	F
Ilex vomitoria	Nana-dwarf yaupon holly	C,F
	Pendula-weeping yaupon holly	C,F
	yaupon holly	C,F
Juniperus chinensis	Media-old gold juniper	C,F
Juniperus conferta	Emerald sea shore juniper	F
Juniperus horizontalis	Huntington blue juniper	C,F
	Wiltonii-blue carpet juniper	C,F
Juniperus procumbens	Nana-dwarf Japaneses garden juniper	C,F
Juniperus prostrata	Prostrata juniper	C,F
Juniperus sabina	Broadmoor juniper	F
	Foemina-Hicks juniper	F
	Tamariscifolia-Tam juniper	F
Juniperus scopulorum	Emerald green juniper	F

Shrubs (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Juniperus spp.	Juniper	C,F
Juniperus squamata	Blue juniper	F
	Blue star juniper	F
	Parsonii juniper	F
Justicia brandegeana	Shrimp plant	C,F
Justicia spicigera	Honeysuckle, Mexican	F
Kalmia latifolia	Laurel, mountain	F
Lagerstroemia indica	Crape myrtle	C,F
Lavandula angustifolia	English lavender	C,F
Leucothoe axillaris	Leucothoe, coast	F
Leucothoe fontanesiana	Leucothoe, drooping	F
Ligustrum amurense	Privet, amur	C,F
Ligustrum japonicum	Privet, Japanese	C,F
	yellow tip ligustrum	C,F
Ligustrum lucidum	Privet, glossy	C,F
Ligustrum ovalifolium	California privet	F
Ligustrum texanum	Howardi privet	F
	Wax leaf privet	F
Ligustrum vicaryi	Privet, golden	C,F
	Vicary golden privet	C,F
Livistona chinensis	Chinese fountain palm	F
Lonicera fragrantissima	Winter honeysuckle	F
Lonicera periclymenum	Flowering woodbine	F
	Serotina woodbine	F
Lonicera sempervirens	Trumpet honeysuckle	F
Lorpetalum chinense	(No common name)	C,F
Mahonia aquifolium	Oregon grape	F
Myoporum parvifolium	Myoporum, prostrate	F
Myrtus communis	Myrtle, true	C,F
Nandina domestica	Compacta-dwarf heavenly bamboo	C,F
	Harbour dwarf-heavenly bamboo	C,F
	Heavenly bamboo (Nandina)	C,F
	Nana compacta-heavenly bamboo	C,F
	Nana purpurea-heavenly bamboo	C,F
	Woods dwarf-heavenly bamboo	C,F
Nerium oleander	Hardy red oleander	C,F
	Oleander	C,F
	Ruby lace oleander	C,F
Osmanthus heterophyllus	Osmanthus, holly-leaf	F
Pachysandra terminalis	Japanese spurge	C,F
Philadelphus spp.	Mockorange	C,F
Phoenix roebelenii	Pigmy date palm	F
Photinia fraseri	Fraser's photinia	C,F
	Photinia	C,F
Pieris japonica	Lily-of-the-valley	F
	Snowdrift lily-of-the-valley	F
	Temple bells lily-of-the-valley	F
	Valley rose lily-of-the-valley	F
	Andromeda	C,F
Pittosporum spp.	Pittosporum	C,F

Shrubs (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Pittosporum tobira	Green pittosporum	F
	Japanese pittosporum	F
	Tobira	F
	Wheeler's dwarf pittosporum	F
Platycladus orientalis	Arborvitae, Oriental	C,F
Plumbago ariculata	Blue cape plumbago	F
Podocarpus macrophyllus	Yewpine	C,F
Potentilla fragiformis	Cinquefoil	F
Potentilla fruticosa	Cinquefoil	C,F
Protea neriifolia	Protea	F
Pyracantha coccinea	Firethorn, scarlet	C,F
Pyracantha fortuneana	Lolendei Monrovia pyracantha	C,F
Pyracantha fortuneana	Monon pyracantha	C,F
	Red elf hybrid pyracantha	C,F
	Rutgers hybrid pyracantha	C,F
	Santa Cruz pyracantha	C,F
	Victory pyracantha	C,F
Pyracantha skoidzumi	Firethorn, formosa	C,F
Pyracantha, fortuneana	Firethorn	C,F
Rhaphiolepis indica	Enchantress-Moness rhaphiolepis	F
	Rhaphiolepis (India hawthorn)	C,F
	Springtime-Monme rhaphiolepis	F
Rhaphiolepis ovata	Roundleaf rhaphiolepis	F
Rhipsalidopsis gaertneri	Eastercactus	C,F
Rhododendron calendulaceum	Flame azalea	F
Rhododendron campylocarpum	Butterfly rhododendron	F
Rhododendron carolinianum x daurium	PJM rhododendron	F
Rhododendron catawbiense	Catawba album rhododendron	C,F
	Catawba rhododendron	C,F
	Lord Roberts rhododendron	C,F
	Rocket rhododendron	C,F
Rhododendron forrestii x griersonianum	Elizabeth rhododendron	F
Rhododendron hybrid spp.	America rhododendron	F
	English Roseum rhododendron	F
	Nova Zembla rhododendron	F
	Scintillation rhododendron	F
Rhododendron impeditum	Rhododendron	F
Rhododendron indica	Formosa azalea	C,F
	Waucabusa azalea	C,F
Rhododendron kerume	Coral bells azalea	C,F
	Hino crimson azalea	C,F
	Hino pink azalea	C,F
	Snow azalea	C,F
Rhododendron maximum	Rhodie max (rosebay)	C,F
Rhododendron mucronulatum	Rhododendron	F
Rhododendron satuski	Gumpo pink azalea	F
	Higasa azalea	F

Shrubs (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Rhododendron spp.	Azalea	C,F
	Rhododendron	C,F
Rhododendron spp. *hybrids*	Carror azalea	C,F
	Girard Roberta azalea	F
	Golden flare exbury azalea	F
Rhus lancea	Sumac, African	C,F
Rosa rugosa	Ramanas rose	F
Rosmarinus officinalis	Rosemary	F
Senecio cineraria	Dusty miller	C,F
Spiraea vanhouttei	Bridal wreath	F
Syringa vulgaris	Lilac, common	C,F
Syzygium paniculata	Brush cherry	C,F
Taxus cuspidata	Yew, Japanese	F
Taxus media	Yew	F
Thuja occidentalis	Arborvitae, American	C,F
	Emerald arborvitae	F
	Globosa-globe arborvitae	F
	Little giant-dwarf arborvitae	F
	Nigra-dark American arborvitae	F
	Pyramidalis arborvitae	F
	Rheingold arborvitae	F
	Woodwardii arborvitae	F
Thuja orientalis	Aureus nana-dwarf golden arborvitae	F
	Minima glauca-dwarf arborvitae	F
Thuja plicata	Red Cedar, Western	F
Trachelospermum jasminoides	Star jasmine, Chinese	F
Veitchia merrilli	Christmas palm	F
Viburnum carlesii	Koreanspice viburnum	C,F
Viburnum davidii	David viburnum	F
Viburnum japonicum	Viburnum	F
Viburnum judd (V X Judii)	Viburnum	C,F
Viburnum opulus sterile	Common snowball viburnum	F
Viburnum plicatum tomentosum	Doublefile viburnum	F
Viburnum setigerum	Tea viburnum	F
Viburnum suspensum	Viburnum, Sandankwa	F
Viburnum tinus	Viburnum, Laurustinus	C,F
	Compactum-spring bouquet viburnum	F
Viburnum tinus compactum	Spring bouquet viburnum	F
Viburnum trilobum compactum	Dwarf cranberry bush	F
Viburnum x pragense	Viburnum	F
Weigela florida	Bristol ruby weigela	F
	Java red weigela	F
	Minuet weigela	F
	Weigela, oldfashioned	F
Xylosma congestum	Xylosma	F
Yucca elata	Yucca, soaptree	C,F
Yucca recurvifolia	Yucca, pendulous	F

Groundcovers/Perennials

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Agapanthus africanus	Lily-of-the-Nile	C,F
Ajuga spp.	Carpet bugle	F
Arctotheca calendula	Cape weed	F
Asparagus retrofractus	(No common name)	C,F
Asparagus varieegata	Tree fern	C,F
Aster novae-angliae	New England aster	C,F
Aster novi-belgii	New York aster	C,F
Athyrium nipponimcum	Japanese painter fern	C,F
Brassica oleracea	Wild cabbage	C,F
Callistepheus chinensis	China aster	C,F
Campanula elatines	Bellflower	C,F
Carpobrotus edulis	Ice plant, largeleaf (see label)	F
Clytostoma callistegioides	Trumpet vine, violet	C,F
Cortaderia selloana	Pampas grass	F
Cuphea hyssopifolia	False Mexican heather	C,F
Delosperma alba	White iceplant	F
Dietes vegeta	Fortnight lily	C,F
Digitalis mertonensis	Foxglove	C,F
Doronicum cordatum	Leopard's bane	C,F
Drosanthemum floribundum	Trailing rosea iceplant	F
Erianthus ravennae	Hardy pampus grass	C,F
Festuca ovina glauca	Blue fescue	F
Gaillardia grandiflora	Blanket flower	C,F
Gazania rigens leucolaena	Gazania, trailing	C,F
Gazania spp.	Gazania	F
Hedera canariensis	Ivy, Algerian	F
Hedera helix	Ivy, English	F
Heliotropium fragrans	Common heliotrope	C,F
Hemerocallis spp.	Daylily	C,F
Hosta lancifoila	Albo-marginata hosta	C,F
Hosta spp.	Lily, plantain	C,F
Heuchera micrantha	Coral bells	C,F
Hypericum spp.	St. Johnswort	C,F
Iberis sempervirens	Evergreen candytuft	C,F
Lampranthus spectabilis	Trailing iceplant	F
Leptospermum scaparium	New Zealand teatree/Manuka	C,F
Limonium perezii	Statice/Sea lavender	C,F
Liriope gigantea	White lily turf	F
Liriope muscari	Lilac beauty lily turf	C,F
	Majestic lily turf	C,F
	Monroe white lily turf	C,F
	Silvery sunproof lily turf	C,F
	Variegated liriope lily turf	C,F
	Big blue lily turf	C,F
Lobelia erinus	Edging lobelia	C,F
Lonicera japonica	Honeysuckle, Japanese	F
Mesembryanthemum crystallinum	Ice plant (see label)	F
Monarda didyma	Bee Balm	C,F
Ophiopogon japonicus	Mondo grass	F

Groundcovers/Perennials (Cont.)

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Osteospermum fruticosum	Daisy, trailing African	F
Pachysandra terminalis	Japanese spurge	F
Pennisetum setaceum	Fountaingrass	C,F
Polystichum polyblepharum	Tassel fern	C,F
Sedum brevifolium	Stonecrop	C,F
Sedum kamtschaticum	Stonecrop	C,F
Sedum spurium	Stonecrop, tworow	C,F
Tulbaghia violacea	Society garlic	C,F
Verbena rigida	Veined verbena	C,F
Veronica spp.	Speedwell	C,F
Vinca major	Periwinkle, bigleaf	F
Vinca minor	Periwinkle, dwarf	F

Flowers

Scientific Name	Common Name	Recommended Treatment Method F = Field Grown C = Container Grown
Achillea spp.	Yarrow	C,F
Antirrhinum majus	Snapdragon	F
Caladium bicolor	Caladium, fancy leafed	F
Chrysanthemum spp.	Chrysanthemum	C,F
Mixed hybrid	Dahlia	C,F
Caladium bicolor	Fancy-leaved caladium	F
Coreopsis lanceolata	Coreopsis	F
Coreopsis verticulata	Threadleaf coreopsis	C,F
Dianthus barbatus	Sweet William	F
Dianthus gratianopolitanus	Cheddar pink	C,F
Dicentra spectabilis	Bleeding heart	C,F
Dimorphotheca spp.	Marigold, cape	F
Echinacea purpurea	Coneflower, purple	C,F
Evolvulus nuttallianus	Blue daze	C,F
Geum quellyon	Geum	F
Gladiolus hortulanus	Gladiolus	F
Gypsophila paniculata	Baby's breath	F
Impatiens wallerana	Impatiens (Busy lizzie)	F
Iris spp.	Iris, bearded	F
Liatris spicata	Blazing star	C,F
Pelargonium hortorum	Geranium	F
Petunia spp.	Petunia	C,F
Portulaca grandiflora	Moss, rose	F
Ranunculus asiaticus	Ranunculus, Persian	F
Rosa spp.	Rose	F
Rudbeckia fulgida	Blackeyed susan	C,F
Rudbeckia hirta	Daisy, gloriosa (black-eyed Susan)	F
Salvia spp.	Salvia (Sage)	F
Stokesia laevis	Aster, stokes	F
Strelitzia reginae	Bird of paradise	F
Tagetes spp.	Marigold	F
Viola wittrockiana	Pansy	F
Zinnea elegans	Zinnia, common	F

Non-bearing Trees and Vines†

	Recommended Treatment Method F = Field Grown C = Container Grown
almond	F
apple	F
apricot	F
avocado	F
blackberry	F
blueberry	F
boysenberry	F
cherry, sour	F
cherry, sweet	F
currant	F
dewberry	F
elderberry	F
fig	F
filbert	F
gooseberry	F
grape, American	F
grape, European	F
grapefruit	F
kiwi	F
Kumquat	C,F
lemon	F
loganberry	F
macadamia nut	F
nectarine	F
olive	F
orange	C,F
peach	F
pear	F
pecan	C,F
pistachio	F
plum	F
pomegranate	F
prune	F
raspberry	F
walnut, black	F
walnut, English	F

† Non-bearing plants are defined as those that will not bear fruit for at least one year after treatment.

Ornamental Bulbs

Surflan AS may be applied for control of susceptible annual weeds in ornamental bulbs, e.g., bulbous iris, daffodil (narcissus), hyacinth, and tulip. Apply Surflan AS to the soil surface 2-4 weeks after planting, but prior to the emergence of annual weeds. For fall planted bulbs, apply Surflan AS again in late winter or early spring to weed-free soil surfaces.

Broadcast Application Rates

Time of Application	Soil Texture	Surflan AS (qt/acre)	Surflan AS (fl oz/1000 sq ft)	Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
Fall	Coarse	0.75	0.5	3	1.5
Fall	Medium and Fine	1.5	1.0	3	2.25
Feb. - March	All Soil Textures	0.75	0.5	3	2.25

Special Use Precautions:

Do not apply to tulip plants that have emerged to a height greater than 3/4 inch.

Do not apply to gladioli corms prior to emergence or less than one (1) inch in diameter.

Shadehouse Areas

Surflan AS may be applied to drainage areas under benches in open shadehouse-type structures where the natural flow of air is unimpeded. Do not apply in enclosed greenhouses or in enclosed shadehouse-type structures. Do not apply within 3 weeks prior to enclosure of greenhouse or poly-type structures.

Christmas Tree Plantations

Surflan AS - Alone

Apply Surflan AS as a directed spray to the soil surface or as an overtop spray to established plantings of field grown Christmas tree species, including fir (*Abies* spp.), pine (*Pinus* spp.), and spruce (*Picea* spp.). Follow all instructions provided in the "General Information" section of this label.

Broadcast Application Rates

Length of Control	Surflan AS (qt/acre)	Surflan AS (fl oz/1000 sq ft)	Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
2 - 4 months	2	1.5	2	8
4 - 8 months	4	3	2	8

Tank Mix Combinations

Tank mix combinations of Surflan AS plus other labeled herbicides may be used as directed or overtop sprays in established Christmas tree plantings. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

Surflan AS Plus glyphosate: Apply tank mix combinations of Surflan AS plus glyphosate only as directed sprays in Christmas tree plantings. When applied according to use directions, Surflan AS plus glyphosate will provide postemergence control of susceptible weed species listed on the label for glyphosate and residual preemergence control of susceptible weed species listed on the label for Surflan AS. Refer to the label for glyphosate for specific use directions, precautions, and limitations before use.

Special Use Precautions:

Do not apply to Douglas-fir (*Pseudotsuga menziesii*). Do not apply to seedbeds or seedling transplant beds. Apply only to established plants that have been transplanted into their final growing location for a sufficient period of time to allow the soil to be firmly settled around the roots from packing and rainfall or irrigation.

Noncropland Areas and Industrial Sites

Noncropland Areas - Tank Mix Combinations

Tank mix combinations of Surflan AS plus glyphosate and many other labeled herbicides may be used to control undesirable vegetation in noncropland areas such as roadsides, rights-of-way, etc. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

Broadcast Application Rates

Length of Control	Surflan AS (qt/acre)	Surflan AS (fl oz/1000 sq ft)	Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
2 - 4 months	2	1.5	2	6
4 - 8 months	4	3	4	12
8 - 12 months	6	4.5	8	12

Industrial Sites - Tank Mix Combinations

Tank mix combinations of Surflan AS plus glyphosate, Spike herbicide, and many other labeled herbicides may be used as overtop sprays to control existing vegetation on industrial sites such as utility substations, highway guard rails, sign posts, and delineators. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

Warm Season Turfgrasses

Surflan AS may be applied as a preemergence treatment for control of annual grasses and certain broadleaf weeds in established warm season turf including bahiagrass, bermudagrass, buffalograss, centipedegrass, St. Augustinegrass, zoysiagrass, and established tall fescue growing in warm season areas. Established turf is defined as a dense turf having a well-anchored root system and healthy, vigorous top growth. Use Surflan AS only as a part of a total turf management program that includes good fertilization practices.

Surflan AS may be tank mixed with Gallery herbicide (California registration pending) and applied preemergence to broaden the spectrum of broadleaf weed control in warm season turf. Refer to the label for Gallery for specific use directions, precautions, and limitations before use.

Any cultural practices that disturb the soil, such as aerification or verticutting, should be done prior to application of Surflan AS.

Surflan AS will not control emerged weeds. Successful preemergence control of weeds listed on this label requires that Surflan AS be applied prior to weed germination and be activated by at least one-half (1/2) inch of rainfall or irrigation within 21 days of application.

Surflan AS may injure turf that is not well established or is stressed or weakened due to unfavorable winter climatic conditions, drought, nematodes, or other factors which damage or weaken turf root systems. Apply Surflan AS only to healthy, well-established turf that has a well-anchored root system.

Do not apply Surflan AS in the spring or early summer to tall fescue turfgrass reseeded the previous fall. In such cases, apply Balan 2.5G granular herbicide at 60-80 pounds per acre in early summer (Round 1) and Surflan AS at 1.5 quarts per acre approximately eight weeks later (Round 2). Do not apply Surflan AS at the single application rate (2 quarts per acre) to established tall fescue; in such cases, apply 1.5 quarts per acre of Surflan AS in an initial application, followed by a second application of 1.5 quarts per acre 8-10 weeks later.

In bermudagrass areas that have been overseeded with winter grasses, a spring application of Surflan AS will thin the overseeded grasses.

Annual Grasses Controlled by Surflan AS

Summer Annuals:

Common Name	Scientific Name
barnyardgrass (watergrass)	*Echinochloa crus-galli*
crabgrass, large	*Digitaria sanguinalis*
crabgrass, smooth	*Digitaria ischaemum*
crabgrass	*Digitaria* spp.
crowfootgrass	*Dactyloctenium aegyptium*
foxtail, bristlegrass	*Setaria magna*
foxtail, giant	*Setaria faberi*
foxtail, green (pigeongrass)	*Setaria viridis*
foxtail, robust	*Setaria robusta*
foxtail, yellow	*Setaria glauca*
goosegrass (silver crabgrass)	*Eleusine indica*
Johnsongrass (seedling only)	*Sorghum halepense*
ryegrass, Italian	*Lolium multiflorum*
sandbur, field	*Cenchrus incertus*

Annual Broadleaf Weeds Controlled by Surflan AS

Summer Annuals:

Common Name	Scientific Name
carpetweed	*Mollugo verticillata*
knotweed, prostrate	*Polygonum aviculare*
purslane, common	*Portulaca oleracea*

Winter Annuals:

Common Name	Scientific Name
chickweed, common	*Stellaria media*
henbit	*Lamium amplexicaule*

Broadleaf Weeds Suppressed by Surflan AS

Common Name	Scientific Name
groundsel, common	*Senecio vulgaris*
spurge, prostrate	*Euphorbia humistrata*
woodsorrel, yellow	*Oxalis stricta*

Application Rates, Frequency, and Timing of Application

Surflan AS can be applied in the spring for summer annual grass and broadleaf weed control, and in the winter for annual broadleaf weed control.

Broadcast Application Rates (Warm Season Turfgrasses)

Use Area	Surflan AS (qt/acre)	Surflan AS (fl oz/1000 sq ft)	Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
All, except Florida	1.5	1	3	6
	2	1.5	3	6
Florida	1.5	1	3	4.5

1. Summer Annual Grasses and Broadleaf Weeds

Single Application Program: Apply 2 quarts per acre of Surflan AS in late winter or early spring, prior to the onset of conditions favorable for annual weed germination.

Split Application Program: As an alternative to a single application program, Surflan AS may be applied in a split application. This program is desirable when the initial application is made well in advance of weed germination and where weed control is desired for a longer period of time. Apply 1.5 quarts per acre of Surflan AS in an initial application, followed by a second application of 1.5 quarts per acre 8-10 weeks later.

The second treatment of the split application may follow application of a different preemergence grass herbicide in place of the initial application of Surflan AS.

2. Winter Annual Broadleaf Weeds

Apply Surflan AS as a preemergence treatment in late summer or early fall, prior to the expected germination period for winter annual broadleaf weeds.

Weed Control in Florida

In Florida, apply 1.5 quarts per acre of Surflan AS three times per year, or every 90-100 days, in the fall, early spring, and early summer. Do not apply more than 1.5 quarts per acre of Surflan AS in any single application.

Application Equipment

Apply Surflan AS evenly over the turfgrass area. Avoid spray pattern skips and overlaps that may result in incomplete coverage or over-application. For best results, use application equipment designed to uniformly broadcast liquid herbicides. Calibrate application equipment prior to use, according to manufacturer's directions. Check equipment frequently to make sure it is working properly and distributing spray uniformly.

Reseeding

Herbicides that control annual weeds may also affect establishment of desirable turfgrass seedlings. Reseeding should be delayed for at least 90-120 days following application of Surflan AS. When reseeding, it is essential that proper cultural practices such as soil cultivation and seedbed preparation, irrigation, and fertilization be followed. For satisfactory reseeding results following use of Surflan AS, the seeding rate should be increased and equipment designed to place seed in full contact with soil (such as the Rogers Aero Seeder) should be employed.

Special Use Precautions:

To avoid possible injury, do not apply Surflan AS to:

- Cool season turfgrass species.
- Golf course putting greens and tees or lawns containing dichondra or cool season turfgrass species.
- Newly sprigged or sodded areas of bermudagrass, St. Augustinegrass, centipedegrass, or zoysiagrass until these turfgrasses are well established and have well-anchored root systems.
- Newly hydromulched areas of bermudagrass until such areas are well established.
- Bermudagrass variety "Sun Turf" when tank mixed with atrazine.

IMPORTANT INFORMATION
READ BEFORE USING PRODUCT

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product reflect the opinion of experts based on field use and tests, and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of United Phosphorus, Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of United Phosphorus, Inc. and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold United Phosphorus, Inc. and Seller harmless for any claims relating to such factors.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, UNITED PHOSPHORUS, INC. AND SELLER MAKE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ON THIS LABEL.

To the extent consistent with applicable law, United Phosphorus, Inc. or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product and **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF UNITED PHOSPHORUS, INC. AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF UNITED PHOSPHORUS, INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

United Phosphorus, Inc. and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by the duly authorized representative of United Phosphorus, Inc.

Surflan is a registered trademark of United Phosphorus, Inc.

ESL05182010
Rev. 7/26/11
70506-44(072711-4154)

Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 07-May-2015 **Revision date** 04-Nov-2015 **Revision Number:** 2

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Surflan AS Specialty

Other means of identification

Item#: 12U-125
UN-No UN3082
Synonyms Not Available
Registration number(s) 70506-44

Recommended use of the chemical and restrictions on use

Recommended use Herbicide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

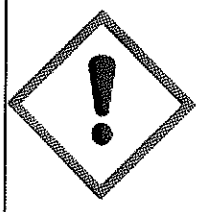
Acute toxicity - Inhalation (Dusts/Mists)	Category 4

Label elements

EMERGENCY OVERVIEW

WARNING

hazard statements
HARMFUL IF INHALED



appearance Opaque Orange **Physical state** liquid **Odor** Slight aromatic

Precautionary Statements - Prevention
Do not get in eyes, on skin, or on clothing
Use only outdoors or in a well-ventilated area

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
• May be harmful in contact with skin

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Oryzalin	19044-88-3	40.4	
Glycerin	56-81-5	<30	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Take off contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Call poison control center or doctor for treatment advice. Wash face, hands and any exposed skin thoroughly after handling.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and Effects No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician No information available.

5. Fire-fighting measures

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
No information available.

Hazardous combustion products Oxides of nitrogen. Can emit toxic fumes under fire conditions.

Explosion data

Protective equipment and precautions for firefighters

Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions — Avoid contact with the skin and the eyes. Use personal protective equipment. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions — Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up — Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling — Keep out of reach of children. Do not eat, drink or smoke when using this product. Avoid contact with skin and eyes. Wear personal protective equipment. Remove and wash contaminated clothing before re-use. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage — Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place.

incompatible materials — No materials to be especially mentioned.

8. Exposure Controls/Personal Protection

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL
Glycerin		TWA: 15 mg/m³ mist, total particulate TWA: 5 mg/m³ mist, respirable fraction (vacated) TWA: 10 mg/m³ mist, total particulate (vacated) TWA: 5 mg/m³ mist, respirable fraction

Engineering controls — Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems. PESTICIDE APPLICATORS & WORKERS. THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Personal protective equipment

Eye/Face Protection — Where there is potential for eye contact have eye flushing equipment available. Use eye protection to avoid eye contact.

Skin protection — Long sleeved clothing. Long pants. Socks and footwear.

Respiratory protection — Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe

respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations
Do not eat, drink or smoke when using this product. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	liquid		
appearance	Opaque Orange	**Odor**	Slight aromatic
color	No information available		

Property	**VALUES**	**Remarks/ • Method**
pH	5.9	
Melting point/freezing point	6.9 °C / 44 °F	
Boiling Point/Range	No information available	
Flash Point	>93 C >200 F	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	1.138 to 1.239 @ 25 C	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	No information available	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available
Bulk density	No information available

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
Keep away from open flames, hot surfaces and sources of ignition.
incompatible materials
No materials to be especially mentioned.
Hazardous decomposition products

Toxic gases and fumes may be formed if product is involved in fire. Oxides of nitrogen.

11. Toxicological Information

Information on Likely Routes of Exposure

Inhalation May cause irritation of respiratory tract. HARMFUL IF INHALED.

Eye contact Moderately irritating to the eyes.

Skin contact Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion MAY BE HARMFUL IF SWALLOWED.

Component Information Oryzalin -
In animals has been shown to cause liver, kidney, bladder, spleen, and/or blood effects. Repeated excessive exposure to crystalline silica may affect lung function and cause silicosis, a progressive and disabling disease of the lungs. Some evidence suggests that kidney effects may also result from excessive exposure. Glycerin:
No skin allergy was observed in guinea pigs or humans following repeated exposure. Oral administration in clinical use has caused nausea and vomiting. Repeated or long-term oral exposure produced no adverse effects in rats. No adverse effects on fertility or birth defects were observed in rats or their offspring following oral exposure before and during pregnancy. Generally, no genetic changes were observed in tests using bacteria or animal cells.

Single exposure studies indicate that this material is practically non-toxic if swallowed (rat LD50 12,600- 27,200 mg/kg) or absrobed through skin (rabbit LD50 >10,000 mg/kg), no more than slightly toxic if inhaled (rat 1 hr LC50 >0.57 mg/l), and slightly irritating to rabbit eyes and skin.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Oryzalin 19044-88-3	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.79 mg/L
Glycerin 56-81-5	-	> 10 g/kg (Rabbit)	570 mg/m³ (Rat) 1 h

Information on Toxicological Effects

Symptoms No information available.

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

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.
Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Target organ effects kidney, Respiratory System, EYES, skin.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document . 5290 mg/kg (rat) 1697.9 mg/kg (rat) 0 mg/l (mist) (dust) mg/m³ 0 ml/m³ (Vapor)

12. Ecological Information

Marine Pollutant.

ecotoxicity

Oryzalin:
Highly toxic to aquatic organisms LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species. Slightly toxic to birds on an acute basis LD50 between 501 and 2000 mg/kg.
Bobwhite quail acute oral LD50 1046 mg/kg
Honeybee acute oral LD50 >100 ug/bee

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
Bioaccumulative potential.

Chemical name	Log Pow
Oryzalin 19044-88-3	> 2
Glycerin 56-81-5	-1.76

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. 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. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. Do not apply directly to wetlands or water.

Contaminated packaging Refer to product label.

14. Transport Information

DOT When shipped domestically by highway in non-bulk containers this product can be shipped as not regulated.

UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant.

ICAO

UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IATA

UN-No	UN3082

Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	UN3082
Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Marine Pollutant	Yes

15. Regulatory Information

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:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Causes moderate eye irritation. Prolonged or frequent repeated skin contact may cause allergic reaction in some individuals. Toxic to fish.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Oryzalin - 19044-88-3	1.0

SARA 311/312 Hazardous Categorization

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

CERCLA
SARA Product RQ 0

RCRA
Pesticide Information

State Regulations

Component	CAS-No	CATEGORY	California Prop. 65	Non-additive, corrosive chemical type
Oryzalin 19044-88-3 (40.4)	19044-88-3	Carcinogen	Carcinogen	

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Oryzalin		X			
Glycerin	X	X	X		

International regulations
U.S. EPA Label information
EPA Pesticide registration number 70506-44

16. Other Information

NFPA **HEALTH** 0 **flammability** 1 **Instability** 0 **Physical hazard** -

Preparation Date 07-May-2015
Revision date 04-Nov-2015
Revision Summary
Correct spelling error(s)
Disclaimer
United Phosphorus, Inc. believes that the information and recommendations container herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with other materials or in any process. Further, since the conditions and methods of use are beyond the control of United Phosphorus , Inc. and United Phosphorus Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

End of MSDS

PULL HERE TO OPEN

Resolute™ 65WG

Herbicide

For preemergence control of grass and broadleaf weeds in:

- Established turfgrasses (excluding golf course putting greens), lawns and sod nurseries
- Container, field-grown and landscape ornamentals
- Conifer and hardwood seedling nurseries
- Established perennials and wildflower plantings
- Non-crop areas, including plantings on managed rights-of-way for transportation systems and utilities (including, roadways, roadsides, railways and equipment yards)
- Facilities including substations, tank farms, pumping stations, parking and storage areas, and ungrazed fence rows
- Christmas tree farms

Active Ingredient:	
Prodiamine*:	65.0%
Other Ingredients:	35.0%
Total:	100.0%

*CAS No. 29091-21-2

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-834
EPA Est. 62171-MS-001

SCP 834D-M2B 0909
4011673

5 pounds

Net Weight

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• 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 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 treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOTLINE NUMBER For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call 1-800-888-8372	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

continued...

PRECAUTIONARY STATEMENTS *(continued)*

Personal Protective Equipment (PPE)

WPS USES:

Applicators and other handlers (other than mixers and loaders) who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170) - in general, agricultural-plant uses are covered - must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as butyl rubber >14 mils, or neoprene rubber >14 mils, or nitrile rubber >14 mils
- Shoes plus socks

Mixers and Loaders must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as butyl rubber >14 mils, or neoprene rubber >14 mils, or nitrile rubber >14 mils
- Shoes plus socks

NON-WPS USES:

Mixers and loaders who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) - in general, only agricultural-plant uses are covered by the WPS - must wear:

- Waterproof gloves

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.

Engineering Control Statements

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

User Safety Recommendations:

Users should:

- 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.
- After handling this product, immediately wash the outside of gloves before removing them, then remove gloves and all other PPE. Immediately wash thoroughly and change into clean clothing.

Environmental Hazards

This product has low solubility in water. At the limit of solubility, this product is not toxic to fish. However, at concentrations substantially above the level of water solubility, it may be toxic to fish. 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 from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not contaminate water when disposing of equipment wash water.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions, under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and (2) Buyer and User assume the risk of any such use. TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall SYNGENTA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitations of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a 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 regulation.

AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Exception: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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, such as butyl rubber >14 mils, or neoprene rubber >14 mils, or nitrile rubber >14 mils
- Shoes plus socks

GENERAL INFORMATION

WHERE TO USE

Resolute 65WG is a preemergence herbicide that provides residual control of many grass and broadleaf weeds in:

- Established turfgrasses (excluding golf course putting greens), lawns and sod nurseries
- Container, field-grown and landscape ornamentals
- Conifer and hardwood seedling nurseries
- Established perennials and wildflower plantings
- Non-crop areas, including plantings on managed rights-of-way for transportation systems and utilities (including, roadways, roadsides, railways and equipment yards)
- Facilities including substations, tank farms, pumping stations, parking and storage areas, and ungrazed fence rows
- Christmas tree farms

HOW RESOLUTE 65WG WORKS

Resolute 65WG controls susceptible weeds by preventing growth and development of newly germinated weed seeds. Weed control is most effective when Resolute 65WG is activated by at least 0.5 inch of rainfall or irrigation or shallow incorporation (1 to 2 inches) before weed seeds germinate and within 14 days following application.

USE PRECAUTIONS

- Do not graze or feed livestock forage cut from areas treated with Resolute 65WG.
- Do not apply Resolute 65WG to plants that will be consumed for food use.
- Follow all applicable directions, restrictions, and precautions on the labels of EPA-registered tank mix partners.
- Do not blend Resolute 65WG onto dry fertilizer or any other granular material.
- **Chemigation:** Do not apply this product through any type of irrigation system unless instructed otherwise in this label.
- Do not apply aerially.
- Do not apply to golf course putting greens.

NEW PLANTINGS, REPLANTING AND ROTATIONAL PLANTINGS

Nursery, landscape, or non-crop land areas treated with Resolute 65WG should be rotated only to ornamental species listed on this label for 1 year following application unless the following test has shown species safety:

Before planting a species not listed on this label, it is recommended that several test strips of an indicator plant such as wheat, sorghum or corn be sown into the treated area. If the indicator plants germinate and grow normally to a height of 12 inches with normal root development, it is safe to plant.

In areas disturbed by new plantings or replanting of labeled species, it may be necessary to retreat exposed soil to maintain satisfactory weed control.

MIXING AND APPLICATION PROCEDURES

MIXING

Resolute 65WG must be mixed thoroughly in the spray tank to ensure uniform application. Follow these steps:

1. Fill the spray tank 1/4 full with clean water or fluid fertilizer only.
2. Start agitation and check to ensure it is working properly.
3. Add Resolute 65WG directly into the tank.
4. Add the rest of the carrier to obtain the final spray volume.
5. A spray colorant may be used with Resolute 65WG to mark areas as they are treated. This will improve application accuracy by minimizing swath skips and overlaps.
6. Maintain vigorous agitation in the spray tank before and during the application. This will ensure a well-mixed spray suspension.
7. Do not allow spray suspension to dry in the tank. Thoroughly clean the sprayer after use by flushing the system with water containing a detergent. Refer to **Pesticide Disposal** section of this label for waste disposal.

TANK MIXING RESOLUTE 65WG

Resolute 65WG may be tank mixed with certain other EPA-registered herbicides to provide a broader spectrum of weed control or to control emerged weeds. Refer to the specific directions for use for tank mix partners, and consult the label(s) of the individual tank mix partner(s) for use rate, application timing, weeds controlled, and specific precautions and/or restrictions. Tank mixes are permitted only in states where the tank mix partner(s) are registered for the application site and the turf and ornamental species listed. When using Resolute 65WG in a tank mixture with other pesticides, observe the most restrictive label limitations and precautions on the labels of the products used.

Before tank mixing with other pesticides not named on this label compatibility must be tested. See the **Compatibility Test** section.

COMPATIBILITY TEST

Before mixing Resolute 65WG with other pesticides in the spray tank, test the compatibility by mixing all components (carrier and pesticide products) in a small container in proportionate quantities. For example, a 1-qt. jar would be 1/100 the volume of a 25 gals./A spray rate. At 1 lb./A the Resolute 65WG rate would be proportional to 4.5 g per quart. Add approximately 1.5 teaspoons to a qt. of water. Calculate amounts for other products based on rate per acre. An approximate volume would be 1.5 teaspoons for each lb./A of a dry formulation and 0.5 teaspoons for each pt./A of a liquid formulation. (See following table).

Amount of Component to Add to One Quart Jar of Spray Carrier (Assuming Carrier Volume of 25 gals./A)

Component Formulations	Rate Per		Level Teaspoons
	Acre	1,000 Sq. Ft.	
Resolute 65WG	1.0 lb.	0.4 oz.	1.5
Dry Tank Mix Partners	1.0 lb.	0.4 oz.	1.5
Liquid Tank Mix Partners	1.0 pt.	0.4 oz.	0.5

If components do not ball-up or form flakes, sludge, gels, oily films or layers, then the mixture is compatible. Incompatibility will usually occur within 5 minutes after mixing. If the components are not compatible, a compatibility agent must be added to the tank mixture. Rerun the test to determine if the mixture is suitable after addition of the compatibility agent. If components are still not compatible, do not tank mix.

MIXING ORDER FOR TANK MIXTURES

Notes: 1) When mixing Resolute 65WG with other components (carrier and partner pesticide products), allow products to completely dissolve between steps. This is key when tank mixing with ester formulations. 2) Maintain agitation throughout mixing and application of the mixture.

Add the products to the spray tank in the following order:

1. Add products packaged in water-soluble bags first. Agitate the tank mixture. Allow the water-soluble bags to completely dissolve and the product to disperse before adding any other tank mix partner.
2. Then add water-dispersible granules (WDG or WG formulations) and wettable powders (WP formulations). Add wettable powders to the tank as agitation continues. Allow the product to disperse completely before other products are added.
3. Add spray adjuvants and spray markers. Read the adjuvant's label first and use only those adjuvants approved for application to turf and ornamentals.
4. Add flowable liquids (FL) or suspension concentrates (SC).
5. Add emulsifiable concentrates (EC) last.

APPLICATION

Apply Resolute 65WG in a minimum of 20 gals./A (0.5 gal/1,000 sq. ft.) of carrier (water and/or fluid fertilizer) using a calibrated, low-pressure sprayer with 50-mesh or coarser screens. A broadcast boom or handheld wand designed for herbicide or insecticide application will provide the best results. Select nozzle pressure and gallonage to provide complete coverage.

SPECIFIC USE DIRECTIONS

ESTABLISHED TURF

Resolute 65WG is a preemergence herbicide that, when properly applied, will control certain grass and broadleaf weeds listed on this label in established turfgrasses including:

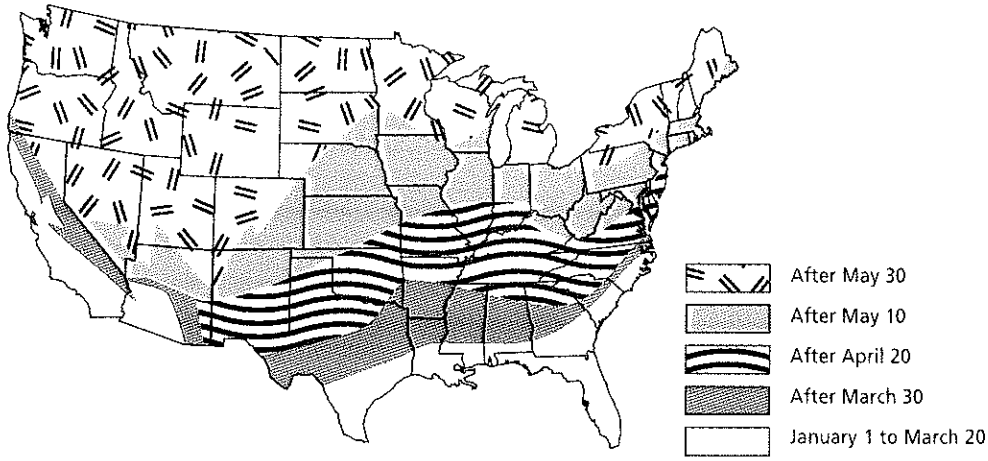
- Golf courses **excluding** putting greens
- Lawns
- Sod nurseries

The maximum amount of Resolute 65WG that may be applied per year is given for each turfgrass species in the **Annual Use Rates - Turfgrass** section of this label.

For optimum weed control, Resolute 65WG should be activated by at least 0.5 inch of rainfall or irrigation before weed seeds germinate and within 14 days following application. See the map below for approximate crabgrass seed germination dates.

Crabgrass Seed Germination Dates

Approximate Date



Use Precautions - Turfgrass

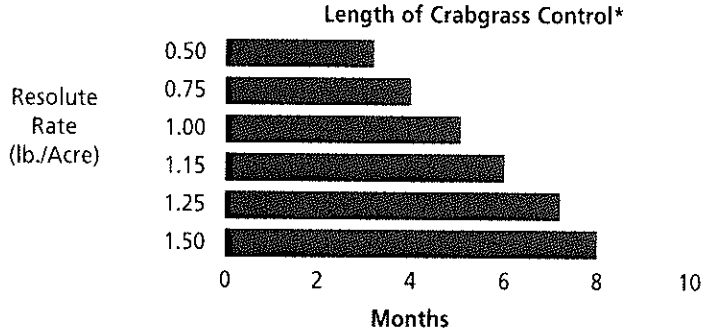
- Do not apply Resolute 65WG to areas where dichondra, colonial bentgrass, velvet bentgrass or annual bluegrass (*Poa annua*) are desirable species.
- Do not cut (harvest) treated sod within 90 days of application. To avoid turfgrass injury, do not apply to newly set sod until the sod has rooted and exposed edges have filled in.
- To avoid turfgrass injury, do not apply Resolute 65WG to turf stressed by conditions such as drought, low fertility, or pest damage.
- Disturbing the herbicide barrier with cultural practices such as disking may result in reduced weed control.
- ***Do not apply Resolute 65WG to golf course putting greens.***
- If the depth of the creeping bentgrass root system becomes shallow and root tips contact Resolute 65WG-treated soil, new root formation may be inhibited. Mowing height can affect the depth of a plant's root system. To avoid this, do not apply Resolute 65WG to creeping bentgrass less than 0.5 inch in height.

Application Timing and Rate - Turfgrass

Resolute 65WG may be applied as a single application or in sequential applications to control weeds germinating throughout the year. All applications should be made before target weeds germinate. **Resolute 65WG will not control weeds that have already emerged.**

The amount of Resolute 65WG to apply is based upon: 1) the length of weed control desired (the higher the application rate, the longer the control; see Figure 1), 2) the turf species, and 3) the maximum amount which is applied to the turf species per calendar year (see Table 1).

Figure 1: Length of Crabgrass Control*



***Length of control varies by region. This figure is an average for planning purposes.**

Annual Use Rates - Turfgrass

Resolute 65WG can be applied to the turfgrass species listed in the following table. Do not apply more than the highest rate listed for each species in a calendar year.

Table 1: Maximum Application Rate of Resolute 65WG per Calendar Year for Turfgrass Species[1]

Turf Species	Lbs. product/A	Oz. product/ 1,000 sq. ft.	Area treated per water soluble packet (sq. ft.)
Bermudagrass[2] Bahiagrass Centipedegrass Kikuyugrass Seashore Paspalum St. Augustinegrass[3] Tall Fescue (including turf-type) Zoysiagrass	1.0-2.3[1]	0.36-0.83	22,000-9,600
Buffalograss Kentucky Bluegrass Perennial Ryegrass	0.5-1.50[1]	0.185-0.55	44,000-14,700
Fine Fescue	0.5-1.15[1]	0.185-0.42	44,000-19,100
Creeping Bentgrass (0.5 inches or more in height)[4]	0.5-1.00[1]	0.185-0.37	44,000-22,000

[1]Resolute 65WG may be applied more than once a year as long as the total amount applied is not greater than the maximum application rate per calendar year for the turf species. All applications must be made before weed seeds germinate.

[2]May be used on newly-sprigged or plugged Bermudagrass at rates not to exceed 0.80 lb./A (0.30 oz./1,000 sq. ft.). Newly-sprigged or plugged Bermudagrass stolon rooting may be temporarily retarded.

[3]Use an initial rate of 0.75-1.5 lbs./A (0.28-0.55 oz./1000 sq. ft.) per application.

[4]To avoid grass injury, do not apply Resolute 65WG to creeping bentgrass mowed at less than 0.5 inch in height.

Weeds Controlled (Turf, Ornamentals)

When used as directed in this label, Resolute 65WG will control the following weeds:

Barnyardgrass
Bluegrass, Annual (*Poa annua*)[1]
Carpetweed
Chickweed, Common[2]
Chickweed, Mouseear (from seed)
Crabgrass (Large, Smooth)[3]
Crowfootgrass
Cupgrass, Woolly
Foxtails, Annual
Goosegrass[5]
Henbit[2]
Itchgrass
Johnsongrass (from seed)
Junglerice
Knotweed[2]
Kochia
Lambsquarter, Common
Lovegrass
Panicum, (Texas, Fall, Browntop)
Pigweed
Purslane, Common
Pusley, Florida
Rescuegrass[4]
Shepherd's-Purse[2]
Signalgrass, Broadleaf
Speedwell, Persian
Sprangletop
Spurge, Prostrate
Witchgrass
Woodsorrel, Yellow (from seed)

[1]In areas where *Poa annua* is a winter annual, apply Resolute 65WG (see Table 1) in August or September to established, non-overseeded turf before *Poa annua* seeds germinate. These timings are approximate. Consult State Extension Service for more specific timing for your area. Also see the section of this label ***Poa Annua* Control in Established Bermudagrass Overseeded with Perennial Ryegrass.**

[2]To control this weed, apply Resolute 65WG in late summer, fall, or winter before weed seeds germinate.

[3]Fall Applications for Spring Crabgrass Control in Cool-Season Grasses: In those areas where the ground freezes in the winter, Resolute 65WG can be applied in the fall at rates of 1.0-1.15 lbs./A after the soil temperature falls below 50°F but before the ground freezes. This application will control crabgrass the following spring.

[4]Suppression only.

[5]In many areas, a single application of 1.0-2.3 lbs./A Resolute 65WG will control goosegrass. However, under heavy goosegrass pressure and/or an extended growing season, the most effective control may be maintained by making a "split application" (i.e., two applications) that does not exceed the maximum application rate per calendar year for the turfgrass species.

When to Apply Resolute 65WG After Overseeding Turf

Injury to desirable seedlings is likely if Resolute 65WG is applied before the secondary roots of seedlings are in the second inch of soil (not thatch plus soil). To reduce the potential to injure overseeded turf, wait 60 days after seeding or until after the second mowing, whichever is longer, before applying Resolute 65WG.

When to Overseed After Application - All States*

Resolute 65WG will inhibit the development of turfgrass species overseeded too soon after application. Follow rates and intervals in the table below for best overseeding/reseeding results.

***Note:** See exceptions for ***Poa annua* Control in Established Bermudagrass Overseeded with Perennial Ryegrass** below.

Amount of Resolute 65WG	Interval (Months) Before Overseeding*		
Lbs. Product/A	North	Transition	South
0.75	4	4	4
1.00	5	4	4
1.15	6	5	5
1.25	---	6	6
1.50	---	7	7
1.75	---	---	9
2.00	---	---	10
2.30	---	---	12

***Poa annua* Control in Established Bermudagrass Overseeded with Perennial Ryegrass (Arizona, California, Nevada and Texas Only)**

Use on golf courses (excluding golf course putting greens), lawns, and sod nurseries when overseeding with perennial ryegrass (minimum seeding rate of 350 lbs./A).

How Much and When to Apply

Amount to Apply	When to Apply	Expected Control	Use Precautions
0.58-1.0 lb./A	6-8 weeks **before** ryegrass overseeding **Second application:** 4-8 weeks **after** over-seeding or when perennial ryegrass roots are in the second inch of soil	1 application for 70% or greater control of *Poa annua* Second applica-tion may enhance control	• Some seedling mortality and temporary reduction in root growth of new seedlings may occur. • To reduce the potential for seedling mortality maintain a moist seedbed with light, frequent irrigation. • Make no more than two applications per year for this use, and do not exceed a total of 1.3 lbs./A per year. • Do not make a second application if any injury to the ryegrass is observed after the first application. • Do not make a second application unless the product was first applied before overseeding.

Control of *Poa annua* in Perennial Ryegrass Overseedings (Alabama, Louisiana, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee Only)

Use this product on golf courses (excluding golf course putting greens) when overseeding with perennial ryegrass only (minimum seeding rate of 350 lbs./A).

How Much and When to Apply

Amount to Apply	When to Apply	Expected Control	Use Precautions
0.58-1.0 lb./A	8-10 weeks before ryegrass overseeding	70% or greater	• Some seedling mortality and temporary reduction in root growth of new seedlings may occur. • To reduce the potential for seedling mortality, maintain a moist seedbed with light, frequent irrigation. • To maximize seedling establishment, use lower rate and/or the maximum time interval before overseeding. To maximize Poa annua control, use higher rate and shorter time interval before overseeding.

CONTAINER, FIELD-GROWN, AND LANDSCAPE ORNAMENTALS (INCLUDING CHRISTMAS TREE FARMS)

Application Timing and Information

Resolute 65WG:

- Will not control emerged weeds.
- May be applied to newly-transplanted and established ornamentals as broadcast or over-the-top spray.
- Is most effective when applied to soil free of clods, weeds, and debris such as leaves and mulch.
- Is most effective when the product is activated in the soil before weed seeds germinate and within 14 days after application.
- Is activated when the treated area receives at least 0.5 inch of irrigation or rainfall, or shallow (1 to 2 inches) mechanical incorporation.

Use Precautions:

To reduce injury potential:

- In the spring when buds are rapidly growing and expanding, over-the-top application of Resolute 65WG may temporarily injure new growth of desirable plants. To reduce the possibility of injury at this time, wait to apply Resolute 65WG over the top of newly emerged vegetation until it has hardened off, unless your experience indicates that the ornamental plant will not be injured by the over-the-top application.

- After application (immediately for deciduous plants), apply overhead irrigation to wash Resolute 65WG from plant surfaces onto soil (watering plants before application may improve the washing process).

Application Sites and Instructions

Site	Application Instructions
Newly-transplanted Container or Field Nursery Stock	• Delay application until soil has settled around transplants. • Water transplants thoroughly before application. • Apply after cuttings form roots and are established. • To avoid inhibition of the tissue union, apply before budding/grafting or after buds/grafts have taken.
Established Container, Field Nursery Stock, or Landscape Plants	• Apply at any time as a broadcast, over-the-top, or directed spray.
Landscape (or Ornamental) Plantings	• Apply as a broadcast, over-the-top, or as a directed spray. • Delay application to newly-transplanted ornamentals until soil has settled around transplants.
Bare Ground Application for Container Placement	• Apply to soil (including mulch, gravel, wood chips, or other permeable base) upon which containerized ornamentals are placed. • After Resolute 65WG is applied, perform shallow cultivation or hand weeding only, to avoid disturbing the herbicide barrier.
In Shadehouses and Uncovered Polyhouses	• After Resolute 65WG is applied, uncovered polyhouses must remain open for at least 7 days and ornamentals must receive two irrigations totaling at least 1/2 inch of water.
Ornamental Bulbs and Perennial Wildflower Plantings	• Resolute 65WG may be applied to bulbs or perennial wildflower species listed in the section, **Tolerant Ornamental Species.** • Apply before or after bulbs emerge but before bulbs bloom and weeds emerge. In wildflowers, a postemergence herbicide labeled for wildflowers may be needed to control weeds that have already emerged.

How Much and When to Apply (Container, Field-Grown and Landscape Ornamentals)

Amount to Apply (Broadcast)*	When to Apply	Comments/Instructions
1.0-2.3 lbs./A or 0.37-0.83 oz./ 1,000 sq. ft.	In fall or spring before weeds germinate or after weeds are removed	• Use the higher rate for longer control. • Resolute 65WG may be applied more than once per year as long as the total amount of product applied does not exceed 2.3 lbs./A per year.

***Note:** For band application calculate amount per acre:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{broadcast rate} = \text{amount to apply per acre of field}$$

Equivalent Measurements for Resolute 65WG

Lbs./A	Oz./1,000 sq. ft.	Approximate Equivalent - Tablespoons/1,000 sq. ft.
1.0	0.37	1
1.5	0.55	1.5
2.0	0.74	2
2.3	0.83	2.25

Tank Mixtures for Use On Container, Field-Grown, and Landscape Ornamentals

Resolute 65WG may be tank mixed with other registered herbicides listed on this label to provide a broader spectrum of weed control or to control emerged weeds. Tank mixes with Resolute 65WG are for use only in states where the tank mix partner(s), application site, and intended use pattern are registered.

Follow the label(s) of the tank mix partner(s) for application rates, timing, weeds controlled, tolerant ornamentals, and specific use precautions and/or restrictions. Before mixing pesticides in the spray tank, test compatibility by mixing the products in a small container first. See the **Compatibility Test** section of this label.

Tank Mix Partners for Resolute 65WG on Ornamentals

Product	Precautions/Instructions
Goal® (use on conifers only)	• Mix with Resolute 65WG for postemergence control of certain broadleaf weeds including malva and filaree.
Gallery®, Princep®, Pennant®	• See product labels for weed spectrum and tolerant ornamentals.
Touchdown® Pro (or other glyphosate-based products), Reward® and Finale®	• These non-selective tank mix herbicides control most **emerged** annual broadleaves and grasses. • Take extreme care to prevent tank mixtures with these products from contacting the foliage and stems of turfgrass, trees, shrubs, or other desirable vegetation because desirable vegetation may be severely injured or killed. Apply these tank mixtures as a directed spray and use a shield to prevent spray from contacting foliage of desirable plants. • Following instructions on the tank mix partner's label, delay irrigation of the treated area to allow time for the herbicide to be absorbed by weed foliage.

Tolerant Ornamental Species - Container, Field-Grown, and Landscape Ornamentals

Resolute 65WG will not harm most trees, shrubs, vines, and flowers. The species listed below in Table 2 are tolerant to Resolute 65WG. Resolute 65WG is approved for application, except in California, to the species in Table 3. Resolute 65WG may be applied over-the-top of the listed species.

When plants are under stress (such as heat, drought, or frost damage) some cultivars of listed plants may be sensitive to Resolute 65WG.

Table 2: Tolerant Ornamental Species - Container, Field-Grown, and Landscape Ornamentals - All States

Scientific name	Common name
Abies spp.	Fir species** (Balsam, Fraser, Noble, etc.)
Acer palmatum	Japanese Maple
Acer platanoides	Norway Maple***
Actinidia chinensis	Kiwi*
Agapanthus africanus	Lily-of-the-Nile (African Lily)
Arctostaphylos densiflora	Vine Hill Manzanita
Arctotheca calendula	Cape Weed
Aucuba japonica	Japanese Aucuba
Berberis gladwynensis	Barberry
Berberis julianae	Wintergreen Barberry

continued...

Table 2: Tolerant Ornamental Species - Container, Field-Grown, and Landscape Ornamentals - All States *(continued)*

Scientific name	Common name
Berberis mentorensis	Mentor Barberry
Berberis thunbergii	Japanese Barberry
Berberis verruculosa	Warty Barberry
Buxus microphylla	Japanese Boxwood
Callistemon viminalis	Weeping Bottlebrush
Calluna vulgaris	Scotch Heather
Carpobrotus edulis	Hottentot Fig (Ice Plant)
Cassia artemisioides	Feathery Cassia
Ceanothus rigidus	Wild Lilac
Chamaecyparis pisifera	False Cypress
Cleyera japonica	Cleyera
Citrus spp.	Citrus species*
Cornus florida	Flowering Dogwood
Cornus stolonifera	American Dogwood
Cortaderia selloana	Pampas Grass
Cotoneaster apiculatus	Cranberry Cotoneaster
Cotoneaster buxifolius	Cotoneaster
Cotoneaster dammeri	Bearberry Cotoneaster
Cotoneaster microphyllus	Rockspray Cotoneaster
Crataegus spp.	Hawthorne
Cupressus sempervirens	Italian Cypress
Delosperma alba	White Trailing Ice Plant
Dodonaea viscosa	Hop Bush
Elaeagnus pungens	Silverberry
Euonymus fortunei	Wintercreeper
Euonymus japonica	Japanese Spindle Tree (Evergreen Euonymus)
Euonymus kiautschovicks	Spreading Euonymus
Fatsia japonica	Japanese Aralia
Forsythia intermedia	Border Forsythia
Forsythia viridissima	Greenstem Forsythia

Scientific name	Common name
Gardenia jasminoides	Gardenia, Cape-Jasmine
Gladiolus spp.	Gladiolus species**
Hedera helix	English Ivy
Hibiscus	Rose of Sharon**
Hibiscus Rosa-sinensis	Chinese Hibiscus**
Ilex cornuta	Chinese Holly**
Ilex crenata	Japanese Holly
Ilex opaca	American Holly
Ilex pernyi	Holly
Ilex vomitoria	Yaupon Holly
Iris spp.	Iris species**
Jasminium nudiflorum	Winter Jasmine
Juniperus chinensis	Chinese Juniper
Juniperus conferta	Shore Juniper
Juniperus horizontalis	Creeping Juniper
Juglans spp.	Walnut*
Justicia brandegeana	Shrimp Plant
Lagerstromia indica	Crape Myrtle
Ligustrum amurense	Amur Privet
Ligustrum japonicum	Japanese Privet
Ligustrum lucidum	Glossy Privet (Wax-Leaf)
Lirope muscari	Big Blue Lillyturf
Lonicera japonica	Japanese Honeysuckle
Lonicera tatarica	Tatarian Honeysuckle
Magnolia spp.	Magnolia species**
Malephora luteola	Ice Plant
Malus spp.	Crabapple*
Nandina domestica	Heavenly Bamboo
Narcissus spp.	Narcissus species**
Nerium spp.	Oleander
Olea europaea	Olive*
Ophiopogon japonicus	Mondo Grass**

continued...

Table 2: Tolerant Ornamental Species - Container, Field-Grown, and Landscape Ornamentals - All States *(continued)*

Scientific name	Common name
Osteospermum fruticosum	Trailing African Daisy
Oxydendrum arboreum	Sourwood
Persea Americana	Avocado*
Photinia fraseri	Frasier's Photinia (Redtip)
Picea spp.	Spruce species*** (Colorado Blue, Norway, etc.)
Pieris japonica	Lily-of-the-Valley Shrub
Pinus brutia	Calabrian Pine
Pinus canariensis	Canary Island Pine
Pinus elliottii	Slash Pine
Pinus halepensis	Aleppo Pine
Pinus nigra	Austrian Black Pine
Pinus palustris	Longleaf Pine
Pinus radiata	Monterey Pine
Pinus strobus	Eastern White Pine
Pinus sylvestris	Scotch Pine
Pinus taeda	Loblolly Pine
Pinus thunbergiana	Japanese Black Pine
Pinus virginiana	Virginia Pine
Pistacia spp.	Pistachio*
Pittosporum rhombifolium	Queensland Pittosporum
Pittosporum tobira	Japanese Pittosporum
Podocarpus macrophyllus	Japanese Yew
Prunus laurocerasus	English Laurel
Prunus spp.	Almond, Apricot, Nectarine, Peach, Plum and Prune*
Pseudotsuga menziesii	Douglas Fir***
Pyracantha coccinea	Firethorn Scarlet
Pyracantha fortuneana	Firethorn
Pyracantha koidzumii	Firethorn
Pyrus spp.	Bradford Pear spp.
Quercus rubra	Oak species

Scientific name	Common name
Rhaphiolepis indica	Indian Hawthorne
Rhododendron (including Azalea)	'Coral Bells', 'Formosa', 'Hino-crimson', 'PJM', 'Roseum Elegans'
Rosa banksiae	Lady Bank's Rose
Rosmarinus officinalis	Rosemary*
Rumohra adiantiformis	Leatherleaf Fern
Santolina virens	
Sedum album	Stonecrop
Syzygium paniculatum	Japanese Boxcherry
Taxus cuspidate	Japanese Yew
Taxus media	Yew
Thuja occidentalis	American Arborvitae
Trachelospermum asiaticum	Star Jasmine
Tsuga canadensis	Canada Hemlock
Tulipa spp.	Tulip species
Viburnum japonicum	Japanese Viburnum
Viburnum odoratissimum	Sweet Viburnum
Viburnum plicatum	Japanese Snowball
Viburnum rigidum	Canary Island Viburnum
Viburnum tinus	Laurustinus
Viburnum trilobum	Cranberry Bush
Viburnum wrightii	Leatherleaf Viburnum
Vinca major	Vinca
Vinca minor	Dwarf Periwinkle
Vitis spp.	Grape*
Weigela florida	Old Fashioned Weigela
Yucca aloifolia	Spanish Bayonet
Yucca filamentosa	Yucca, Adam's Needle

*Do not use on food-producing trees, vines, or plants.
**Not for use on container-grown plants.
***Landscape ornamentals only.

Table 3: Tolerant Ornamental Species/Varieties - Container, Field-Grown and Landscape Ornamentals - All States Except CA

Scientific Name	Common Name
Abelia grandiflora	Abelia: Sherwood
Achillea spp.	Yarrow: King Edward
Agapanthus orientalis	
Akebia quinata	Five-Leaf or Chocolate Vine
Allium cernuum	Lady's Leek, Nodding Onion
Anemone hybrida	Japanese Anemone
Aquilegia spp.	Aquilegia: Red and Gold
Artemisia spp.	Wormwood; Silver Mound, Castle
Aster spp.	Aster: Bonny Blue, Purple Dome
Aster X frikartii	
Athyrium filix-femina	Lady Fern; Fern Lady
Begonia spp.	Fibrous Begonia: Hardy Grandis
Bergenia cordifolia	
Boltonia asteroids	Snowbank
Bougainvillea spp.	Bougainvillea
Buddleia davidii	Butterfly-Bush (Dwarf Blue); Royal Red
Callistemon citrinus	Crimson Bottlebrush
Campanula carpatica	Tussock Bellflower; (White Clips)
Campis X tagliabuana	Trumpet Creeper, Trumpet Flower; Madame Galen
Ceratostigma plumbaginoides	
Chrysanthemum nipponicum	
Coreopsis spp.	Coreopsis (Calliopsis): Early Sunrise, Moonbeam
Crocosmia spp.	Lucifer
Delosperma spp.	Cooperi Pink
Delphinium spp.	Larkspur; Blue Elf
Dianthus deltoids	Dianthus, Maiden Pinks 'Zing'
Dianthus gratianopolitanus	Cheddar Pink
Echinacea pupurea	Coneflower, Purple; Magnus
Forsythia suspensa	Weeping Forsythia
Gaillardia spp.	Gaillardia, Blanket Flower: 'Goblin'

Scientific Name	Common Name
Gaura spp.	
Gentiana dahurica	Gentian
Geranium cinereum	Cranesbill
Gypsophila repens	Baby's Breath
Helianthemum spp.	Sunrose
Hemerocallis spp.	Daylily: Aztec Gold, Stella De Oro, Tender Love
Heucherella spp.	Coral Bell; Bridget Bloom
Hibiscus spp.	Mallow; Disco Belle White
Hosta plantaginea	Hosta, Plantain Lily (Fragrant)
Hosta sieboldiana	Hosta, 'Searsucker'
Houttuynia cordata var. variegata	
Hydrangea macrophylla	Bigleaf Hydrangea
Inula ensifolia	
Iris ensata	Sword-Leaved Iris; Jodlesong
Iris siberica	Siberian Iris; Cabernet
Juniperus davurica	Parsoni
Lagerstromia indica x fauriei	Crape Myrtle; Tuscarora
Lantana montevidensis	Weeping Lantana
Lavender spp.	Lavender; Munstead
Leontopodium alpinum	Edelweiss
Ligustrum sinense	Chinese Privet; Variegata
Lilium spp.	Lily: Jazz
Lirope muscari var. variegata	Lirope, Variegated
Lirope spicata	Lirope, Creeping
Lobelia cardinalis	Cardinal Flower, Indian Pink
Loropetalum chinense	Burgundy
Lythrum spp.	Loosestrife; Modern Pink
Miscanthus sinensis	Yaku Jima**, Silberfeder**
Oenothera missourensis	Evening Primrose
Osmanthus heterophyllus	Osmanthus (False Holly): Gulf Tide
Paeonia suffruticosa	Tree Peony
Pennisetum setaceum	Fountain Grass (Dwarf)**

continued...

Table 3: Tolerant Ornamental Species/Varieties - Container, Field-Grown and Landscape Ornamentals - All States Except CA *(continued)*

Scientific Name	Common Name
Perovskia atriplicifolia	
Physostegia virginiana	Dragonhead, False; Vivid
Quercus shumardii	Oak, Shumard's Red
Rhaphiolepis umbellata	Yedda Hawthorne
Rhododendron (including Azalea)	'Delaware Valley White', 'Flame Creeper', 'Girard Crimson', 'George L. Tabor', 'Wakeiebisu', 'White Gumpo'
Rudbeckia spp.	Black-Eyed Susan: Goldstrum
Saxifraga spp.	Saxifrage; Purple Dome
Scabiosa spp.	Pincushion Flower
Sedum cauticola	Stonecrop; Lidakense
Sedum dasyphyllum	Stonecrop
Sedum spurium	Stonecrop; Dragon's Blood
Spiraea bumalda	Spirea: Anthony Waterer
Syzyglum paniculatum	Australian Brushcherry
Teucrium spp.	Germander
Thalictrum dipterocarpum	Meadow Rue
Veronica spp.	Veronica, Speedwell; Sunny Border
Viburnum suspensum	Arrowood Viburnum

**Not for use on container grown plants

VEGETATION MANAGEMENT

Resolute 65WG may be applied to soil surfaces for preemergence control of many grass and broadleaf weeds in:

- Non-crop areas, including ornamentals (does not include container or field grown ornamentals), and established perennial and wildflower plantings on or surrounding:
  - Managed rights-of-way for transportation systems and utilities including roadways, roadsides, railways, and equipment yards
  - Facilities including substations, tank farms, pumping stations, parking and storage areas, and ungrazed fence rows

Weeds Controlled – Vegetation Management

When used as directed in this label Resolute 65WG will control the following weeds:

Barnyardgrass
Bluegrass, Annual (*Poa annua*)[1]
Carpetweed
Chickweed, Common[1]
Chickweed, Mouseear (from seed)
Crabgrass (Large, Smooth)[3]
Crowfootgrass
Cupgrass, Woolly
Foxtails, Annual
Goosegrass[3]
Henbit[1]
Itchgrass
Johnsongrass (from seed)
Junglerice
Knotweed[1]
Kochia
Lambsquarters, Common
Lovegrass
Panicum, (Texas, Fall, Browntop)
Pigweed
Purslane, Common
Pusley, Florida
Rescuegrass[2]
Shepherd's Purse[1]
Signalgrass, Broadleaf
Speedwell, Persian
Sprangletop
Spurge, Prostrate
Witchgrass
Woodsorrel, Yellow (from seed)

[1]To control this weed, apply Resolute 65WG in late summer, fall, or winter before weed seeds germinate.

[2]Suppression only.

[3]Sequential applications may be made as long as the total amount of product applied does not exceed 2.3 lbs./A per year. To control weeds, all applications must be made before weed seeds germinate.

Application Timing and Information – Vegetation Management

Resolute 65WG:

1. Provides residual preemergence weed control.
2. Will not control emerged weeds.
3. May be applied to newly transplanted and established ornamentals as a broadcast or over-the-top spray.
4. Is most effective when the product is activated in the soil before weed seeds germinate and within 14 days after application.
5. Is activated when the treated area receives at least 0.5 inch of irrigation or rainfall or shallow (1-2 inches) mechanical incorporation.
6. Is most effective when applied to soil free of clods, weeds, and debris such as leaves and mulch.

Use Precautions – Vegetation Management

To reduce injury potential:

1. Direct application of Resolute 65WG to rapidly growing tissue or buds may injure desirable plants. In the spring when buds are rapidly growing and expanding, over-the-top application of Resolute 65WG may temporarily injure new growth of desirable plants. To reduce the possibility of injury at this time, wait to apply Resolute 65WG over the top of newly emerged vegetation until it has hardened off unless your experience indicates that the ornamental plant will not be injured by the over-the-top application.
2. After application (immediately for deciduous plants), apply overhead irrigation to wash Resolute 65WG from plant surfaces onto soil. Watering plants before application may improve the washing process.

How Much and When to Apply – Vegetation Management

Amount to Apply (Broadcast)	When to Apply	Comments/Instructions
1.0-2.3 lbs./A *or* 0.37-0.83 oz./ 1,000 sq. ft.	In fall and/or spring before weeds germinate or after weeds are removed.	• Use the higher rate for longer control. • Resolute 65WG may be applied more than once per year as long as the total amount of product applied does not exceed 2.3 lbs./A per year.

*Note: For band application calculate amount per acre:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{broadcast rate} = \text{amt. to apply/acre of field}$$

Equivalent Measurements for Resolute 65WG

lbs./A	oz./1,000 sq. ft	Approximate Equivalent Tablespoons/1,000 sq. ft.
1.0	0.37	1
1.5	0.55	1 1/2
2.0	0.74	2
2.3	0.83	2 1/4

Application Sites and Use Precautions – Vegetation Management

Site	Use Precautions
Ornamental Trees, Shrubs, Vines	• Apply as a broadcast, over-the-top, or as a directed spray. • Delay applications to newly transplanted ornamentals until soil has settled around transplants.
Ornamental Bulbs and Perennial Wildflower Plantings	• May be applied to bulbs or perennial wildflower species listed in the section **Tolerant Ornamental Species**. • Apply before or after bulbs emerge but before bulbs bloom and weeds emerge. • In wildflowers a postemergence herbicide labeled for wildflowers may be needed to control weeds that have already emerged.

Tank Mixtures – Vegetation Management

Resolute 65WG may be tank mixed with other registered herbicides listed on this label to provide a broader spectrum of weed control or to control emerged weeds. Tank mixes with Resolute 65WG are for use only in states where the tank mix partner(s), application site and intended use pattern are registered.

Follow the label(s) of the tank mix partner(s) for application rates, timing, weeds controlled, tolerant ornamentals, and specific use precautions and/or restrictions. Before combining tank mix partners in the spray tank test compatibility by mixing the products in a small container. See the **Compatibility Test** section.

Tank Mixing and Application

Tank Mix Partners for Resolute 65WG – Vegetation Management

Product	Precautions/Instructions
Goal® (use on conifers only)	• Mix with Resolute 65WG for postemergence control of certain broadleaf weeds including malva and filaree.
Gallery®, Princep®, Pennant®	• See product labels for weed spectrum and tolerant ornamentals.
Touchdown® Pro (or other glyphosate-based products) Reward® and Finale®	• These non-selective tank mix herbicides control most emerged annual broadleaves and grasses. • Take extreme care to prevent tank mixtures with these partner products from contacting the foliage and stems of turfgrass, trees, shrubs, or other desirable vegetation because desirable vegetation may be severely injured or killed. Apply these tank mixtures as a directed spray and use a shield to prevent spray from contacting foliage of desirable plants. • Following instructions on the tank mix partner's label, delay irrigation of the treated area to allow time for the herbicide to be absorbed by weed foliage.

Tolerant Ornamental Species* - Vegetation Management

*Not for use on container or field grown ornamentals

Resolute 65WG will not harm most trees, shrubs, vines, and flowers. The species listed below in Table 4 are tolerant to Resolute 65WG. Resolute 65WG is approved for application, except in California, to the species in Table 5. Resolute 65WG may be applied over-the-top of the listed species.

When plants are under stress (such as heat, drought, or frost damage) some cultivars of listed plants may be sensitive to Resolute 65WG.

Table 4: - Tolerant Ornamental Species* - Vegetation Management - All States

Scientific name	Common name
Abies spp.	Fir species (Balsam, Fraser, Noble, etc.)
Acer palmatum	Japanese Maple
Acer platanoides	Norway Maple***
Actinidia chinensis	Kiwi**
Agapanthus africanus	Lily-of-the-Nile (African Lily)
Arctostaphylos densiflora	Vine Hill Manzanita
Arctotheca calendula	Cape Weed
Aucuba japonica	Japanese Aucuba
Berberis gladwynensis	Barberry
Berberis julianae	Wintergreen Barberry
Berberis mentorensis	Mentor Barberry
Berberis thunbergii	Japanese Barberry
Berberis verruculosa	Warty Barberry
Buxus microphylla	Japanese Boxwood
Callistemon viminalis	Weeping Bottlebrush
Calluna vulgaris	Scotch Heather
Carpobrotus edulis	Hottentot Fig (Ice Plant)
Cassia artemisioides	Feathery Cassia
Ceanothus rigidus	Wild Lilac
Chamaecyparis pisifera	False Cypress
Cleyera japonica	Cleyera
Citrus spp.	Citrus species**
Cornus florida	Flowering Dogwood
Cornus stolonifera	American Dogwood
Cortaderia selloana	Pampas Grass
Cotoneaster apiculatus	Cranberry Cotoneaster
Cotoneaster buxifolius	Cotoneaster

Scientific name	Common name
Cotoneaster dammeri	Bearberry Cotoneaster
Cotoneaster microphyllus	Rockspray Cotoneaster
Crataegus spp.	Hawthorne
Cupressus sempervirens	Italian Cypress
Delosperma alba	White Trailing Ice Plant
Dodonaea viscosa	Hop Bush
Elaeagnus pungens	Silverberry
Euonymus fortunei	Wintercreeper
Euonymus japonica	Japanese Spindle Tree (Evergreen Euonymus)
Euonymus kiautschovicks	Spreading Euonymus
Fatsia japonica	Japanese Aralia
Forsythia intermedia	Border Forsythia
Forsythia viridissima	Greenstem Forsythia
Gardenia jasminoides	Gardenia, Cape-Jasmine
Gladiolus spp.	Gladiolus species
Hedera helix	English Ivy
Hibiscus	Rose of Sharon
Hibiscus Rosa-sinensis	Chinese Hibiscus
Ilex cornuta	Chinese Holly
Ilex crenata	Japanese Holly
Ilex opaca	American Holly
Ilex pernyi	Holly
Ilex vomitoria	Yaupon Holly
Iris spp.	Iris species
Jasminium nudiflorum	Winter Jasmine
Juniperus chinensis	Chinese Juniper
Juniperus conferta	Shore Juniper
Juniperus horizontalis	Creeping Juniper
Juglans spp.	Walnut**
Justicia brandegeana	Shrimp Plant
Lagerstromia indica	Crape Myrtle
Ligustrum amurense	Amur Privet
Ligustrum japonicum	Japanese Privet
Ligustrum lucidum	Glossy Privet (Wax-Leaf)
Lirope muscari	Big Blue Lillyturf
Lonicera japonica	Japanese Honeysuckle

continued...

Table 4: - Tolerant Ornamental Species* - Vegetation Management - All States *(continued)*

Scientific name	Common name
Lonicera tatarica	Tatarian Honeysuckle
Magnolia spp.	Magnolia species
Malephora luteola	Ice Plant
Malus spp.	Crabapple**
Nandina domestica	Heavenly Bamboo
Narcissus spp.	Narcissus species
Nerium spp.	Oleander
Olea europaea	Olive**
Ophiopogon japonicus	Mondo Grass
Osteospermum fruticosum	Trailing African Daisy
Oxydendrum arboreum	Sourwood
Persea americana	Avocado**
Photinia fraseri	Frasier's Photinia (Redtip)
Picea spp.	Spruce species*** (Colorado Blue, Norway, etc.)
Pieris japonica	Lily-of-the-Valley Shrub
Pinus brutia	Calabrian Pine
Pinus canariensis	Canary Island Pine
Pinus elliottii	Slash Pine
Pinus halepensis	Aleppo Pine
Pinus nigra	Austrian Black Pine
Pinus palustris	Longleaf Pine
Pinus radiata	Monterey Pine
Pinus strobus	Eastern White Pine
Pinus sylvestris	Scotch Pine
Pinus taeda	Loblolly Pine
Pinus thunbergiana	Japanese Black Pine
Pinus virginiana	Virginia Pine
Pistacia spp.	Pistachio**
Pittosporum rhombifolium	Queensland Pittosporum
Pittosporum tobira	Japanese Pittosporum
Podocarpus macrophyllus	Japanese Yew
Prunus laurocerasus	English Laurel
Prunus spp.	Almond, Apricot, Nectarine, Peach, Plum and Prune**
Pseudotsuga menziesii	Douglas Fir***

Scientific name	Common name
Pyracantha coccinea	Firethorn Scarlet
Pyracantha fortuneana	Firethorn
Pyracantha koidzumii	Firethorn
Pyrus spp.	Bradford Pear spp.
Quercus rubra	Oak species
Rhaphiolepis indica	Indian Hawthorne
Rhododendron (including Azalea)	'Coral Bells', 'Formosa', 'Hino-crimson', 'PJM', 'Roseum Elegans'
Rosa banksiae	Lady Bank's Rose
Rosmarinus officinalis	Rosemary**
Rumohra adiantiformis	Leatherleaf Fern
Santolina virens	
Sedum album	Stonecrop
Syzygium paniculatum	Japanese Boxcherry
Taxus cuspidata	Japanese Yew
Taxus media	Yew
Thuja occidentalis	American Arborvitae
Trachelospermum asiaticum	Star Jasmine
Tsuga canadensis	Canada Hemlock
Tulipa spp.	Tulip species
Viburnum japonicum	Japanese Viburnum
Viburnum odoratissimum	Sweet Viburnum
Viburnum plicatum	Japanese Snowball
Viburnum rigidum	Canary Island Viburnum
Viburnum tinus	Laurustinus
Viburnum trilobum	Cranberry Bush
Viburnum wrightii	Leatherleaf Viburnum
Vinca major	Vinca
Vinca minor	Dwarf Periwinkle
Vitis spp.	Grape**
Weigela florida	Old Fashioned Weigela
Yucca aloifolia	Spanish Bayonet
Yucca filamentosa	Yucca, Adam's Needle

*Not for use on container or field grown ornamentals.

**Do not use on food producing trees, vines, or plants.

***Landscape ornamentals only.

Table 5: - Tolerant Ornamental Species* - Vegetation Management - All States Except CA

Scientific name	Common name
Abelia grandiflora	Abelia: Sherwood
Achillea spp.	Yarrow: King Edward
Agapanthus orientalis	
Akebia quinata	Five-Leaf or Chocolate Vine
Allium cernuum	Lady's Leek, Nodding Onion
Anemone hybrida	Japanese Anemone
Aquilegia spp.	Aquilegia: Red and Gold
Artemisia spp.	Wormwood; Silver Mound, Castle
Aster spp.	Aster: Bonny Blue, Purple Dome
Aster X frikartii	
Athyrium filix-femina	Lady Fern; Fern Lady
Begonia spp.	Fibrous Begonia: Hardy Grandis
Bergenia cordifolia	
Boltonia asteroides	Snowbank
Bougainvillea spp.	Bougainvillea
Buddleia davidii	Butterfly-Bush (Dwarf Blue); Royal Red
Callistemon citrinus	Crimson Bottlebrush
Campanula carpatica	Tussock Bellflower; (White Clips)
Campis X tagliabuana	Trumpet Creeper, Trumpet Flower; Madame Galen
Ceratostigma plumbaginoides	
Chrysanthemum nipponicum	
Coreopsis spp.	Coreopsis (Calliopsis): Early Sunrise, Moonbeam
Crocosmia spp.	Lucifer
Delosperma spp.	Cooperi Pink
Delphinium spp.	Larkspur; Blue Elf
Dianthus deltoides	Dianthus, Maiden Pinks 'Zing'
Dianthus gratianopolitanus	Cheddar Pink
Echinacea pupurea	Coneflower, Purple; Magnus
Forsythia suspensa	Weeping Forsythia
Gaillardia spp.	Gaillardia, Blanket Flower: 'Goblin'
Gaura spp.	
Gentiana dahurica	Gentian
Geranium cinereum	Cranesbill

Scientific name	Common name
Gypsophila repens	Baby's Breath
Helianthemum spp	Sunrose
Hemerocallis spp.	Daylily: Aztec Gold, Stella De Oro, Tender Love
Heucherella spp.	Coral Bell; Bridget Bloom
Hibiscus spp.	Mallow; Disco Belle White
Hosta plantaginea	Hosta, Plantain Lily (Fragrant)
Hosta sieboldiana	Hosta, 'Searsucker'
Houttuynia cordata var.variegata	
Hydrangea macrophylla	Bigleaf Hydrangea
Inula ensifolia	
Iris ensata	Sword-Leaved Iris; Jodlesong
Iris siberica	Siberian Iris; Cabernet
Juniperus davurica	Parsoni
Lagerstromia indica x fauriei	Crape Myrtle; Tuscarora
Lantana montevidensis	Weeping Lantana
Lavender spp.	Lavender; Munstead
Leontopodium alpinum	Edelweiss
Ligustrum sinense	Chinese Privet; Variegata
Lilium spp.	Lily: Jazz
Lirope muscari var. variegata	Lirope, Variegated
Lirope spicata	Lirope, Creeping
Lobelia cardinalis	Cardinal Flower, Indian Pink
Loropetalum chinense	Burgundy
Lythrum spp.	Loosestrife; Modern Pink
Miscanthus sinensis	Yaku Jima, Silberfeder**
Oenothera missourensis	Evening Primrose
Osmanthus heterophyllus	Osmanthus (False Holly): Gulf Tide
Paeonia suffruticosa	Tree Peony
Pennisetum setaceum	Fountain Grass (Dwarf)**
Perovskia atriplicifolia	
Physostegia virginiana	Dragonhead, False; Vivid
Quercus shumardii	Oak, Shumard's Red
Rhaphiolepis umbellata	Yedda Hawthorne

continued...

Table 5: - Tolerant Ornamental Species* - Vegetation Management - All States Except CA *(continued)*

Scientific name	Common name
Rhododendron (including azalea)	'Delaware Valley White', 'Flame Creeper', 'Girard Crimson', 'George L. Tabor', Wakeiebisu, White Gumpo
Rudbeckia spp.	Black-Eyed Susan: Goldstrum
Saxifraga spp.	Saxifrage; Purple Dome
Scabiosa spp.	Pincushion Flower
Sedum cauticola	Stonecrop; Lidakense
Sedum dasyphyllum	Stonecrop
Sedum spurium	Stonecrop; Dragon's Blood
Spiraea bumalda	Spirea: Anthony Waterer
Syzyglum paniculatum	Australian Brushcherry
Teucrium spp.	Germander
Thalictrum dipterocarpum	Meadow Rue
Veronica spp.	Veronica, Speedwell; Sunny Border
Viburnum suspensum	Arrowood Viburnum

*Not for use on container or field grown ornamentals.

**Landscape ornamentals only.

CONIFER AND HARDWOOD SEEDLING NURSERIES (NON-ORNAMENTAL, FORESTRY USE ONLY) – VEGETATION MANAGEMENT

Resolute 65WG

1. Provides residual preemergence weed control in conifer and hardwood seedling nurseries.
2. Provides the most effective weed control when the product is activated in the soil by 0.5 inch of irrigation or rainfall before weed seeds germinate and within 14 days after application.
3. Should be applied to conifer and hardwood seedling nurseries any time after the soil has settled around newly-transplanted seedlings and liners.

Site	Application Rate		Timing	Comments/Instructions
	lbs./A	oz./1,000 sq. ft.		
Conifer and Hardwood Seedling Nurseries	1.0-2.3	0.37-0.84	Apply in fall or spring before weed seeds germinate or after weeds are removed.	• Use higher rate for longer control. • More than one application per year is permitted, but do not apply more than 2.3 lbs/A per year.
Southern Pine Seedbeds	0.75		Just after seeding and/or a minimum of 3 weeks after most seedlings have shed their seedcoat	• To assist in the establishment of Southern pine seedbeds, apply this product preemergence just after seeding pines. • Application after emergence of pine seedlings should not occur until 3 weeks after most seedlings have shed their seedcoat. • Mix this product with clean water and broadcast spray at 20 to 40 psi in a minimum of 20 gals. of water per treated area. • After application, sprinkler irrigate beds with approximately 1/2 inch of water.
Hardwood Seedbeds: Oak (*Quercus* spp.), Sweetgum, Green Ash	0.75-1.5		When seedlings are at least 6 weeks old (from time of 50% germination)	• Use higher rate for longer control and when higher weed pressure is anticipated. • The lower rate will provide 2 to 3 months of weed control. • Broadcast to beds and apply approximately 1/2 inch of sprinkler irrigation afterwards.

Tank Mixtures – Conifer Seedling Nurseries – Vegetation Management

Resolute 65WG may be tank mixed with other registered herbicides listed on this label to provide a broader spectrum of weed control or to control emerged weeds. Tank mixes with Resolute 65WG are for use only in states where the tank mix partner, application site and intended use pattern are registered.

Follow the label of the tank mix partner for application rates, timing, weeds controlled, tolerant ornamentals, and specific use precautions and/or restrictions. Before combining the tank mix partner in the spray tank, test compatibility by mixing the products in a small container. See the **Compatibility Test** section.

Tank Mixing and Application – Vegetation Management

Tank Mix Partner for Resolute 65WG – Conifer Seedling Nurseries

Product	Precautions/Instructions
Goal (use on conifers only)	Mix with Resolute 65WG for postemergence control of certain broadleaf weeds including malva and filaree.

VEGETATION MANAGEMENT (NON-CROP AREAS)

- May be applied to soil surfaces for preemergence control of many grass and broadleaf weeds
- Is most effective when activated by at least 0.5 inch rainfall or irrigation, or shallow incorporation before weed seeds germinate and within 14 days after application.

Site	Application Rate		Timing	Comments/Instructions
	lbs./A	oz./1,000 sq. ft.		
Non Crop Areas, including ornamentals, on or surrounding managed rights- of-way for transportation systems and utilities (including roadways, roadsides, railways, and equipment yards) Facilities including substations, tank farms, pumping stations, parking and storage areas, and ungrazed fence rows	1.0-2.3	0.36-0.83	Before weed seeds germinate	• Use higher rate for longer control. • This product may be applied more than once per year but do not apply more than 2.3 lbs./A per year.

Resolute 65WG may be tank mixed with other registered herbicides to provide a broader spectrum of weed control or to control emerged weeds or brush. Tank mixes with Resolute 65WG are for use only in states where the tank mix partner(s) are registered for the application site.

Tank Mix Partners with Resolute 65WG – Vegetation Management

Products	Comments
Touchdown Pro (and glyphosate-based products[1]), Gramoxone®, Reward, Predict®, Princep, Vanquish®, diuron-based products[1], Finale, Gallery, Garlon®, Goal, Krovar® I and II, Oust®, Arsenal®, Spike™, and Telar®	• Follow the label(s) of the tank mix partner(s) for application rates, timing, weeds controlled, tolerant ornamentals, and specific use precautions and/or restrictions. • Do not mix Resolute 65WG with any product whose label prohibits mixing with another pesticide.

[1]Products with this chemical as the active ingredient and which are labeled for the same use may be used.

STORAGE AND DISPOSAL

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

Pesticide Storage

Store in original container away from fertilizer, feed, or food stuffs.

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

Paper bags and boxes: Non-refillable container. Do not reuse or refill this container. Completely empty container into application equipment. Then offer for recycling if available or dispose of empty bag or box in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Plastic jugs: 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 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 mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or dispose of container in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For minor spills, leaks, or other accidental contamination, follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

Chemigation

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

For non-emergency (e.g., current product information), call Syngenta Crop Protection at 1-800-334-9481.

Manufactured for:
Syngenta Crop Protection, LLC
P.O. Box 18300
Greensboro, North Carolina 27419-8300

SCP 834D-M2B 0909
4011673

BAR CODE # IS
(01) 0 07 02941 34443
LAST DIGIT IS CHECK DIGIT
UCC/EAN 128

Resolute™ 65WG

Herbicide

For preemergence control of grass and broadleaf weeds in:

- Established turfgrasses (excluding golf course putting greens), lawns and sod nurseries
- Container, field-grown and landscape ornamentals
- Conifer and hardwood seedling nurseries
- Established perennials and wildflower plantings
- Non-crop areas, including plantings on managed rights-of-way for transportation systems and utilities (including, roadways, roadsides, railways and equipment yards)
- Facilities including substations, tank farms, pumping stations, parking and storage areas, and ungrazed fence rows
- Christmas tree farms

Active Ingredient:	
Prodiamine*:	65.0%
Other Ingredients:	35.0%
Total:	100.0%

*CAS No. 29091-21-2

See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-834 EPA Est. 62171-MS-001

Resolute™ 65WG is a trademark of a Syngenta Group Company

Manufactured for:
Syngenta Crop Protection, LLC
P.O. Box 18300
Greensboro, North Carolina 27419-8300

SCP 834D-M2B 0909
4011673

5 pounds

Net Weight

KEEP OUT OF REACH OF CHILDREN.

CAUTION

FIRST AID

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: 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 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 treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

HOTLINE NUMBER: For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call **1-800-888-8372.**

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

Harmful if inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Environmental Hazards: This product has low solubility in water. At the limit of solubility, this product is not toxic to fish. However, at concentrations substantially above the level of water solubility, it may be toxic to fish. 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 from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not contaminate water when disposing of equipment wash water.

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in original container away from fertilizer, feed, or food stuffs.

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

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 into application equipment or 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 mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or dispose of container in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For minor spills, leaks, or other accidental contamination, follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

Chemigation

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

Safety Data Sheet

syngenta®

RESOLUTE 65WG HERBICIDE

Date: 7/23/2015
Replaces: 4/8/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **RESOLUTE 65WG HERBICIDE**

Product No.: A9950A

Use: Herbicide

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

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

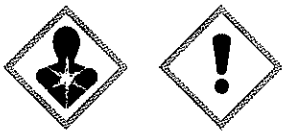
2. HAZARDS IDENTIFICATION

Classifications:
Inhalation: Category 4
Skin Sensitizer: Category 1B
Specific Target Organ Toxicity: Repeated Category 2
Specific Target Organ Toxicity: Respiratory Irritation Category 3
Carcinogenicity: Category 1A

Signal Word (OSHA): Danger

Hazard Statements:
May cause an allergic skin reaction
Harmful if inhaled
May cause respiratory irritation
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:



Precautionary Statements:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection.
If on skin: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If exposed or concerned: Get medical advice/attention.

Call a poison center, doctor or Syngenta if you feel unwell.

See Section 4 First Aid Measures.

Wash contaminated clothing before reuse.

Store locked up.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: May form combustible dust concentrations in air.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Crystalline Silica, Quartz and Cristobalite	Crystalline Silica, Quartz and Cristobalite	14808-60-7	Trade Secret
Kaolin Clay	Kaolin Clay	1332-58-7	Trade Secret
Other ingredients	Other ingredients	Trade Secret	<35.0%
N3, N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine	Prodiamine	29091-21-2	65.0%

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

4. FIRST AID MEASURES

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

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

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

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

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

Most important symptoms/effects:

Allergic skin reaction

Respiratory irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

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

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

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

Specific Hazards:

This material is considered explosion class (Kst) 2.

Fire will spread by burning with flame.

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

See also Sec. 7.

Special protective equipment and precautions for firefighters:

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

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

7. HANDLING AND STORAGE

Precautions for safe handling:

This material is capable of forming flammable dust clouds in air, which, if ignited, can produce a dust cloud explosion. Flames, hot surfaces, mechanical sparks and electrostatic discharges can serve as ignition sources for this material. Electrical equipment should be compatible with the flammability characteristics of this material. The flammability characteristics will be made worse if the material contains traces of flammable solvents or is handled in the presence of flammable solvents.

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

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

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

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Crystalline Silica, Quartz and	10 mg/m³/(%SiO2+2)	0.025 mg/m³	0.05 mg/m³	NIOSH

Cristobalite	(respirable dust)	(respirable silica)	(respirable dust)	
Kaolin Clay	15 mg/m³ TWA (total); 5 mg/m³ TWA (respirable)	2 mg/m³ TWA (respirable)	10 mg/m³ TWA (total); 5 mg/m³ TWA (respirable)	NIOSH
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Prodiamine	Not Established	Not Established	5 mg/m³ TWA	Syngenta

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

Individual protection measures:

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

Eye Contact:
Where eye contact is likely, use dust-proof chemical goggles.

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

Inhalation:
A particulate filter respirator may be necessary until effective engineering controls are installed to comply with occupational exposure limits. Use NIOSH certified respirator with any N, R, P or HE filter. Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow granules

Odor: Odorless

Odor Threshold: Not Available

pH: 8.0 - 9.5 (5% in deionized water)

Melting point/freezing point: Not Available

Initial boiling point and boiling range: Not Applicable

Flash Point (Test Method): Not Applicable

Flammable Limits (% in Air): Not Available

Flammability: Combustible powder

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

Vapor Density: Not Available

Relative Density: Bulk density: 0.577 - 0.689 g/cm³ ; 38 - 45 lb/ft³

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

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: Thermal, mechanical and electrical ignition sources.

Incompatible materials: None known.

Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Respiratory irritation

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Allergic skin reaction, Respiratory irritation

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

Ingestion:	Oral (LD50 Rat) :	> 5000 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	1.81 mg/l air - 4 hours
Eye Contact:	Mildly Irritating (Rabbit)	
Skin Contact:	Practically Non-Irritating (Rabbit)	
Skin Sensitization:	Sensitizing (Guinea Pig)	

Reproductive/Developmental Effects

Prodiamine: Fetal toxicity at high dose levels (rats); developmental and maternal toxicity observed at 1g/kg/day. These were congenital anomalies occurring in test and control animals that are not considered to be treatment related.

Chronic/Subchronic Toxicity Studies

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

Carcinogenicity

Prodiamine: Possible human carcinogen based on limited animal evidence in the absence of human data. Information is insufficient for classification.

Chemical Name	NTP/IARC/OSHA Carcinogen
Crystalline Silica, Quartz and Cristobalite	IARC 1; ACGIH A2
Kaolin Clay	No
Other ingredients	No
N3, N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine	No

Other Toxicity Information

None

Toxicity of Other Components

Crystalline Silica, Quartz and Cristobalite

Chronic inhalation exposure to crystalline silica is known to cause silicosis and pulmonary fibrosis in humans. Experimental animals exposed to crystalline silica developed respiratory tract cancers.

Kaolin Clay

May cause eye and respiratory tract irritation.
Long-term exposure to high concentrations of this dust may produce x-ray evidence of dust in the lungs.
Continued long-term exposure may affect respiratory function in some individuals.

Other ingredients

Not Applicable

Target Organs

Active Ingredients

Prodiamine:	Liver, thyroid

Inert Ingredients

Crystalline Silica, Quartz and Cristobalite:	Respiratory tract
Kaolin Clay:	Eye, respiratory tract, lung
Other ingredients:	Not Applicable

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Prodiamine:

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

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

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

Environmental Fate

Prodiamine:

The information presented here is for the active ingredient, prodiamine.
Does not bioaccumulate. Persistent in soil. Stable in water. Immobile in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

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

Characteristic Waste: Not Applicable
Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Not regulated

Comments

Water Transport - International
Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S. (Prodiamine), Marine Pollutant
Hazard Class: Class 9
Identification Number: UN 3077
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S. (Prodiamine)
Hazard Class: Class 9
Identification Number: UN 3077
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Harmful if inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

EPA Registration Number(s):

100-834

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes:	Acute Health Hazard
	Chronic Health Hazard
	Fire Hazard
	Reactive Hazard
Section 313 Toxic Chemicals:	None

California Proposition 65:

This product contains trace amounts of chemicals known to the State of California to cause cancer as unintended impurities resulting from other entities' manufacturing or processing operations which Syngenta cannot control.

CERCLA/SARA 304 Reportable Quantity (RQ):

None

RCRA Hazardous Waste Classification (40 CFR 261):

Not Applicable

TSCA Status:

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	2*
Flammability:	3	Flammability:	3
Instability:	1	Reactivity:	1

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

Syngenta Hazard Category: D,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 10/21/2004

Revision Date: 7/23/2015 Replaces: 4/8/2015

Section(s) Revised: 2, 4, 11

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

SPECIMEN LABEL

This information is for promotional purposes only. Space considerations may require information to be omitted. Always refer to the actual package for complete label verbiage. This product may not yet be available or approved for sale or use in your area.

Nufarm

Imazuron

Herbicide

ACTIVE INGREDIENTS:

Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)	7.78%
Diuron (3-[3,4-dichloropheny]-1,1-dimethylurea)	62.22%
OTHER INGREDIENTS:	30.00%
TOTAL:	100.00%

CAUTION / PRECAUCIÓN

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 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. 228-654

Manufactured for
Nufarm Americas Inc.
150 Harvester Drive
Burr Ridge, IL 60527

Nufarm

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION

Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are: barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or viton ≥ 14 mils. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

All applicators and other handlers must wear:

- Long sleeved shirt and long pants,
- Shoes plus socks, and
- Chemical-resistant gloves made of any waterproof material such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or viton ≥ 14 mils
- NIOSH approved particulate filtering respirator equipped with N or R, P or HE class filter media. The respirator should have a NIOSH approval number prefix "TC-84A". Groundboom applicators do not need to wear a respirator.
- A chemical resistant apron when mixing, loading, or cleaning equipment.

See Engineering Controls for additional 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 that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

Flaggers supporting aerial applications must use an enclosed cab that meets the definition in the Worker Protection Standard for Agricultural Pesticides [40 CFR 170.240(d)(5)] for dermal protection. In addition, flaggers must wear long-sleeved shirt, long pants, shoes, and socks.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands thoroughly with soap and water after handling and 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.

FIRST AID	
IF SWALLOWED	• Call a poison control center or doctor immediately for treatment advise. • 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 IN EYES	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
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 1-800-424-9300 for emergency medical treatment information.	

ENVIRONMENTAL HAZARDS

This product is toxic to plants. Drift and run-off may be hazardous to plants in water adjacent to treated areas. For terrestrial uses. 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 washwaters or rinsate. Apply this product only as specified on this label.

PHYSICAL OR CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers. DO NOT mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a 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 regulation.

USE PRECAUTIONS

- Do NOT enter or allow others to enter treated areas until sprays have dried.
- Aerial application is prohibited ***except*** for application to rights-of-way.
- DO NOT USE IN CALIFORNIA.
- Do NOT apply more than a total of 12 lbs. a.i. of diuron (19 pounds per acre of this product) or more than two applications of diuron in a 12-month period.
- Do not apply more than 12 lbs. ai/A of diuron per application in areas of high rainfall or dense vegetation. Do not apply more than 8 lbs. ai/A of diuron per application in all other areas.
- Do not reapply this product or any other product containing diuron within 90 days of treatment with any product containing diuron.
- DO NOT mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.
- DO NOT use on food or feed crops.
- DO NOT treat irrigation ditches, or water used for crop irrigation or for domestic purposes.
- 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 washwaters.
- DO NOT drain or flush equipment 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.
- DO NOT use on turfgrass at residential sites (including homes, apartment complexes, condominium grounds, daycare facilities, schools, playgrounds, parks, recreational areas, and sports fields).
- DO NOT side trim desirable vegetation with this product.
- DO NOT allow this product to come in contact with other fertilizers, insecticides, fungicides and seeds.
- Take all measures possible to prevent drift of spray to desirable plants.
- Be sure to clean application equipment after using this product by thoroughly flushing with water.
- Application with a spoon, a pump-feed backpack spreader or a gravity feed backpack spreader is PROHIBITED.
- Use of this product in certain portions of California, Oregon, and Washington is subject to the January 22, 2004 Order for Injunctive relief in Washington Toxics Coalition, et. al. v. EP, C01-0132C, (W.D. WA). For further information, please refer to http://www.epa.gov/espp/wtc/.

GENERAL INFORMATION

This product is a dispersible granule that is mixed with water and a spray adjuvant and applied as a spray solution to the following noncropland areas where bare ground is desired: industrial non-crop areas including utility plant sites, petroleum tank farms, pumping installations, storage areas, railroads, utility, and pipeline rights-of-way; highway rights-of-way; non-irrigation ditchbanks; fence rows; farmyards; and non-crop areas around farm buildings. This product may also be used to control weeds under paved surfaces.

This product controls most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species. This product also provides residual control of weeds that germinate in treated areas.

For annual weed control, either preemergence or postemergence applications may be used; however, a late preemergence to early postemergence application provides the best results in most situations.

For perennial weed control, this product is only effective when applied postemergence and will not control perennial weeds that have not emerged at the time of application. For best results, applications should be made when the weeds are growing vigorously and the spray solution should include a spray adjuvant. For specific instructions, see the "Adjuvants" section of this label.

The duration of residual weed control depends upon the types of weeds present, the application rate, and weather conditions. Longer residual control occurs in areas with sensitive weed species, higher product use rates, lower precipitation and cooler soil temperatures. Higher than average rainfall or warmer than normal temperatures can significantly affect the residual control this product provides and shorten the overall length of control.

Precautions for Avoiding Injury to Non-Target Plants

Untreated trees may be affected by root uptake of this product through movement into the topsoil and injury or loss of desirable trees or other plants may result if this product is applied on or near desirable trees or other pants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. 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 desirable plants when soil particles are moved by water and/or wind. Exposure to this product may injure or kill most crops and injury to crops may result if treated soil is washed, blown or moved onto land used to produce crops.

SPRAY DRIFT

Use best practices to avoid drift to all other crops and non-target areas. Do not apply when conditions favor drift from target areas. The interaction of many equipment-and weather-related factors determine the potential for spray drift. Avoiding spray drift at the application site is the responsibility of the applicator. The applicator must follow the most restrictive precautions to avoid drift, including those found in this labeling as well as applicable state and local regulations and ordinances. A drift control agent may reduce drift, however, it may also decrease weed control.

Aerial Applications:

(1) Applicators are required to use a Coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet; Applicators are required to use a Very Coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet; Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.

(2) Applicators are required to use upwind swath displacement.

(3) The spray boom should be mounted on the aircraft so as to minimize drift caused by wing tip vortices. The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.

(4) Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.

(5) Applications into temperature inversions are prohibited.

(6) Do not apply by air if sensitive non-target crops are within 100 feet of the application site.

Ground Boom Applications:

Apply with nozzle height no more than 4 feet above the ground or plant canopy and Coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.

Use the lowest nozzle height consistent with safety and efficacy.

Direct spray into target vegetation.

Apply only when wind speed is less than or equal to 10 miles per hour.

Do not apply into temperature inversions.

APPLICATION INSTRUCTIONS

For rights-of-way and non-crop areas:

- The maximum rate per application is 19 lbs./acre of this product (equivalent to 12 lbs. diuron active ingredient per acre) in areas of high rainfall or dense vegetation.
- For all other areas, the maximum rate per application is 13 lbs./acre of this product (equivalent to 8 lbs. diuron active ingredient per acre).
- Make a maximum of two applications per year.
- The minimum retreatment interval is 90 days.

Mix this product in water and apply the specified gallons per acre of spray volume using properly calibrated equipment to deliver a uniformly distributed spray pattern. Apply this product at 7-19 pounds of product per acre, although rates as low as 5 pounds per acre may be used *only* if tank mixed with another herbicide (see the TANK MIXES section below). For retreatment purposes within the same growing season, apply this product at a rate of less than 7 pounds per acre.

Rainfall may significantly affect length of residual weed control achieved with this product and in cases of increasing rainfall amounts, higher rates may need to be applied to achieve the desired residual control. Refer to the following table for product rates for different annual rainfall amounts. Actual use rates will depend upon the length of residual control desired as well as weed pressure and environmental conditions.

Average Annual Rainfall	Product Rate
Less than 15 inches	7-10 pounds[†]
Between 15 and 35 inches	8-13 pounds
Greater than 35 inches	13-19 pounds

[†] Initial applications of this product may be made at rates as low as 5-6 pounds per acre, but must be tank mixed with another herbicide (see the TANK MIXES section below).

When both mixing and spraying, be sure to maintain sufficient agitation to keep product suspended in spray mixture.

Postemergence Applications: When making postemergence applications, always use a spray adjuvant (see "Adjuvants" section of this label). For best results on tough to control perennial weeds, applications should be made in combination with one quart per acre of methylated seed oil and at a total volume of 100 gallons per acre or less. For faster burndown or brown-out of target weeds, tank mix this product with products such as Roundup®, or Finale® (refer to the TANK MIXES section for specific instructions).

Tank Mixes

Tank Mix this product with Roundup®, Karmex® (Diuron), Oust®, Garlon®, Finale®, MSMA, Banvel®, Vanquish®, Pendulum®, Plateau®, or Arsenal®. Do not use a tank mix product if the tank mix product label prohibits such mixing. Consult the manufacturer's labels for specific rates and weeds controlled, and always follow the more restrictive label instructions and restrictions on all labels used when making a tank-mix application.

NOTE: Tank-mixes with 2,4-D or products that contain 2,4-D have resulted in reduced perennial weed control performance.

For Control of Undesirable Weeds under Paved Surfaces

Apply this product only to areas that have been prepared according to good construction practices. All rhizomes, stolons, tubers, or other vegetative plant parts present in the site should be removed by scalping with a grader blade to a depth sufficient to ensure their complete removal.

Apply this product under asphalt, pond liners and other paved areas *only* in industrial sites or where the pavement has a barrier along the perimeter that will prevent encroachment of roots of desirable plants. Sites should be paved as soon as possible after application.

NOTE: Do not use this product where landscape plantings could be anticipated, or under paved areas such as driveways or parking lots on residential properties. Do not use in recreational areas such as under bike or jogging paths, golf cart paths, or tennis courts. Injury or death of desirable plants may result if this product is applied where roots are present or where they may extend into the treated area.

Application Directions for Paved Surfaces:

When final grade is established, apply this product in sufficient water (at least 100 gallons per acre) to ensure thorough and uniform wetting of the soil surface, including the shoulder areas. Do not move soil following application. In the spray tank, mix clean water with 19 pounds of product per acre during the filling operation and be sure to agitate before spraying.

Incorporation of this product is required to activate the herbicide if the soil is not moist prior to treatment. Use a rototiller or disc to incorporate product into the soil to a depth of 4 to 6 inches. One inch of rainfall or irrigation will also provide uniform incorporation. If using water to incorporate, do not allow treated soil to wash or move into untreated areas.

Adjuvants

Nonionic Surfactants: A nonionic surfactant at a rate 0.25% v/v or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons) may be used with this product. For best results, select a nonionic surfactant with a HLB (hydrophilic to lipophilic balance) ratio between 12 - 17 and that has at least 70% surfactant in the formulated product (alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements).

Methylated Seed Oils or Vegetable Oil Concentrates: Methylated seed oils are the adjuvant of choice and research indicates that these oils may aid in the deposition and uptake of this product by plants under moisture or temperature stress and will increase control of perennial weeds. Use a methylated seed oil or vegetable-based seed oil concentrate at the rate of 1.5 - 2 pints per acre in place of a surfactant. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable based seed oil concentrates should be mixed at a rate of 1% of the total spray volume, or a nonionic surfactant as described above may be used instead.

Silicone-Based Surfactants: Silicone-based surfactants may allow greater spreading on the leaf surface as compared to conventional nonionic surfactants by reducing the surface tension of the spray droplets. However, some silicone-based surfactants may limit herbicide uptake by drying too rapidly. Refer to the manufacturer's label for specific rate instructions.

Fertilizer/Surfactant Blends: Use 2 - 3 pints of nitrogen-based liquid fertilizers (such as 28%N, 32%N, 10-34-0, or ammonium sulfate) per acre in combination with the specified rate of nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate. Do not use fertilizers in a tank mix without a nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate.

Weeds Controlled

When used at the rates listed in the APPLICATION INSTRUCTIONS section, this product provides preemergence or postemergence control with residual control (control of newly germinating seedlings) of the following target vegetation species. In general, preemergence and postemergence applications of this product control annual weeds while postemergence applications control established biennials and perennials. Use this product only in accordance with the instructions on this label.

Note Regarding Resistant Biotypes: Naturally occurring biotypes of some of the weeds listed on this label (pigweed, kochia and Russian thistle for example) may not be effectively controlled by this and/or other herbicides with the ALS/AHAS enzyme inhibiting mode of action (such as OUST). To ensure control if naturally occurring ALS/AHAS resistant biotypes are present in an area, tank mix or apply this product sequentially with an appropriate registered herbicide having a different mode of action.

WEEDS CONTROLLED[1]

GRASSES Name (Species)	Growth Habit[2]	Name (Species)	Growth Habit[2]
Annual bluegrass (*Poa annua*)	A	Kyllinga (*Cyperus brevifolius*)	A
Annual ryegrass (*Lolium multiflorum*)	A	Lovegrass (*Eragrostis* spp.)	A/P
Annual sweet vernalgrass (*Anthoxanthum odoratum*)	A	Maidencane (*Arundinaria amabilis*)	P
Bahiagrass[7] (*Paspalum notatum*)	P	Orchardgrass (*Dactylis glomerata*)	P
Barnyardgrass (*Echinochloa crusgalli*)	A	Paragrass (*Brachiaria mutica*)	P
Beardgrass (*Andropogon* spp.)	P	Peppergrass (*Lepidium virginicum*)	A
Bermudagrass[7,8,9] (*Cynodon dactylon*)	P	Phragmites (*Phragmites australis*)	P
Big bluestem[7] (*Andropogon gerardii*)	P	Prairie cordgrass (*Spartina pectinata*)	P
Broadleaf signalgrass (*Brachiaria platyphylla*)	A	Prairie threeawn (*Aristida oligantha*)	P
Canada bluegrass (*Poa Compressa*)	P	Quackgrass (*Agropyron repens*)	P
Cattail (*Typha* spp.)	P	Rattail fescue (*Vulpia myuros*)	A
Cheat (*Bromus secalinus*)	A	Reed canarygrass (*Phalaris arundinacea*)	P
Cogongrass (*Imperata cylindrical*)	P	Ricegrass (*Oryzopsis hymenoides*)	A
Crabgrass (*Digitaria* spp.)	A	Saltgrass[7,8,9] (*Distichlis stricta*)	P
Dallisgrass[7] (*Paspalum dilatatum*)	P	Sand dropseed[7] (*Sporobolus cryptandrus*)	P
Downy brome (*Bromus tectorum*)	A	Sandbur (*Cenchrus* spp.)	A
Fall panicum (*Panicum dichotomiflorum*)	A	Smooth brome (*Bromus inermis*)	P
Feathertop (*Pennisetum villosum*)	P	Sprangletop[6,7] (*Leptochloa* spp.)	A
Fescue (*Festuca* spp.)	A/P	Timothy (*Phleum pretense*)	P
Foxtail (*Setaria* spp.)	A	Torpedograss (*Panicum repens*)	P
Goosegrass (*Eleusine indica*)	A	Vaseygrass (*Paspalum urvillei*)	P
Guineagrass (*Panicum maximum*)	P	Velvetgrass (*Holcus lanatus*)	A
Italian ryegrass (*Lolium multiflorum*)	A	Wild barley (*Hordeum* spp.)	A
Johnsongrass (*Sorghum halepense*)	P	Wild oats (*Avena fatua*)	A
Kentucky bluegrass (*Poa pratensis*)	P	Wirestem muhly (*Muhlenbergia frondosa*)	P
		Witchgrass (*Panicum capillare*)	A

BROADLEAF WEEDS Name (Species)	Growth Habit[2]	Name (Species)	Growth Habit[2]
Arrowwood (*Pluchea sericea*)	A	Nettleleaf goosefoot (*Chenopodium murale*)	A
Ageratum (*Asteraceae houstonianum*)	P	Oxeye daisy (*Chrysanthemum leucanthemum*)	P
Broom snakeweed[3] (*Gutierrezia sarothrae*)	P	Pennycress (*Thlaspi* spp.)	A
Bull thistle (*Cirsium vulgare*)	B	Pepperweed (*Lepidium* spp.)	A
Burdock (*Arctium* spp.)	B	Pigweed[6] (*Amaranthus* spp.)	A
Canada thistle[7] (*Cirsium arvense*)	P	Pineapple weed (*Matricaria matricarioides*)	P
Carolina geranium (*Geranium carolinianum*)	A	Plantain (*Plantago* spp.)	P
Carpetweed (*Mollugo verticillata*)	A	Pokeweed (*Phytolacca Americana*)	P
Clover (*Trifolium* spp.)	A/P	Prickly sida (*Sida spinosa*)	A
Cocklebur (*Xanthium strumarium*)	A	Primrose (*Oenothera kunthiana*)	P
Common chickweed (*Stellaria media*)	A	Puncturevine (*Tribulus terrestris*)	A
Common ragweed (*Ambrosia artemisiifolia*)	A	Purple loosestrife[3] (*Lythrum salicaria*)	P
Corn spurry (*Spergula arvensis*)	P	Purslane (*Portulaca* spp.)	A
Dandelion (*Taraxacum officinale*)	P	Ragweed (*Ambrosia* spp.)	A
Dayflower (*Commelina spp.*)	A/P	Rush skeletonweed[3] (*Chondrilla juncea*)	B
Desert Camelthorn (*Alhagi pseudalhagi*)	P	Russian knapweed (*Centaurea repens*)	P
Diffuse knapweed (*Centaurea diffusa*)	A	Russian thistle[3] (*Salsola kali*)	A
Dock (*Rumex* spp.)	P	Saltbush (*Atriplex* spp.)	A
Dogfennel (*Eupatorium capillifolium*)	A	Sesbania (*Sesbania* spp.)	A
Filaree (*Erodium* spp.)	A	Sicklepod (*Cassia obtusifolia*)	A
Fleabane (*Erigeron* spp.)	A	Silverleaf nightshade (*Solanum elaeagnifolium*)	P
Giant ragweed[7] (*Ambrosia trifida*)	A	Sheperd's-purse (*Capsella bursa-pastoris*)	A
Goldenrod (*Solidago* spp.)	P	Smartweed (*Polygonum* spp.)	A/P
Grey rabbitbrush (*Chrysothamnus nauseosus*)	P	Sorrell (*Rumex* spp.)	P
Gromwell (*Lithospermum* spp.)	A	Sowthistle (*Sonchus* spp.)	A

BROADLEAF WEEDS			
Name (Species)	**Growth Habit[2]**	**Name (Species)**	**Growth Habit[2]**
Groundcherry (*Physalis* spp.)	A/P	Speedwell (*Veronica* spp.)	A
Hawksbeard (*Crepis* spp.)	A	Stinging nettle [3] (*Urtica dioica)*	P
Hoary vervain (*Verbena stricta)*	P	Sunflower (*Helianthus* spp.)	A
Horsenettle (*Solanum Canadensis)*	P	Sweet clover (*Melilotus* spp.)	A/B
Horseweed (*Conyza Canadensis)*	A	Tansymustard (*Descurainia pinnata)*	A
Indian mustard (*Brassica juncea)*	A	Texas thistle (*Cirsium texanum)*	P
Japanese bamboo (*Polygonum cuspisatum)*	P	Velvetleaf (*Abutilon theophrasti)*	A
Knawel (*Scleranthus annuus)*	A	Western ragweed (*Ambrosia psilostachya)*	P
Kochia [3] (*Kochia scoparia)*	A	Wild buckwheat (*Polyonum convolvulus)*	A
Lambsquarters (*Chenopodium album)*	A	Wild carrot (*Daucus carota)*	B
Lespedeza (*Lespedeza* spp.)	P	Wild lettuce (*Lactuca spp.)*	A/B
Little mallow (*Malva parviflora)*	B	Wild parsnip (*Pastinaca sativa)*	B
Marigold (*Tagetes* spp.)	P	Wild radish (*Raphanus raphanistrum)*	B
Milkweed (*Asclepias* spp.)	P	Wild turnip (*Brassica campestris)*	B
Miners lettuce (*Montia perfoliata)*	A	Woolly leaf bursage (*Franseria tomentosa)*	P
Morningglory (*Ipomoea* spp.)	A/P	Yellow starthistle (*Centaurea solstitialis)*	A
Mullein (*Verbascum* spp.)	B	Yellow woodsorrel (*Oxalis stricta)*	P

VINES AND BRAMBLES			
Name (Species)	**Growth Habit[2]**	**Name (Species)**	**Growth Habit[2]**
Blackberry [4] (*Rubus* spp.)	P	Morningglory (*Ipomoea* spp.)	A/P
Dewberry [4] (*Rubus* spp.)	P	Poison Ivy (*Rhus radicans)*	P
Field bindweed (*Convolvulus arvensis)*	P	Redvine (*Brunnichia cirrhosa)*	P
Greenbriar (*Smilax* spp.)	P	Trumpetcreeper [7] (*Campsis radicans)*	P
Hedge bindweed (*Calystegia sequium)*	A	Virginia creeper [7] (*Parthenocissus quinquefolia)*	P
Honeysuckle (*Lonicera spp.)*	P	Wild buckwheat (*Polygonum convolvulus)*	P
Kudzu [5] (*Pueraria lobata)*	P	Wild grape (*Vitis* spp.)	P
		Wild rose (*Rosa* spp.)	P

BRUSH
This product controls over 30 species of brush.

[1] Where heavy or well-established infestations occur, use the higher specified rates.

[2] Growth Habit: A= Annual, B= Biennial, P= Perennial

[3] Early postemergence applications are required for best results.

[4] The degree of control is species dependent; some *Rubus* species may not be completely controlled.

[5] Use a minimum of 75 GPA; repeat applications may be required to control established stands.

[6] Control is species dependent; for preemergence control a tank-mix with Pendulum herbicide and/or a postemergence application of a labeled herbicide may be required.

[7] A minimum of 13 pounds of this product per acre is required.

[8] Tank-mix with OUST for best results.

[9] Repeat applications may be required to control established stands.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in a cool, dry area in original container.

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

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available, or dispose of empty bag in a sanitary landfill or 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.

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If you do not agree with or do not accept any of 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.

(RV060110)

Nufarm Imazuron Herbicide is not manufactured or distributed by BASF, seller of Sahara®.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Nufarm Imazuron Herbicide**
EPA Reg. No.: 228-654
Synonyms: Mixture of Imazapyr and Diuron
Product Type: Herbicide

Company Name: Nufarm Americas Inc.
150 Harvester Drive, Suite 200
Burr Ridge, IL 60527

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

Date of Issue: August 23, 2010 **Supersedes:** New
Sections Revised: New

2. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance and Odor: Beige to brown granules with no odor
Warning Statements: CAUTION. Keep out of reach of children. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist.

Potential Health Effects:
Likely Routes of Exposure: Inhalation, eye and skin contact.
Eye Contact: Moderately irritating based on toxicity studies.
Skin Contact: Slightly toxic and slightly irritating based on toxicity studies.
Ingestion:. Slightly toxic if ingested based on toxicity studies.
Inhalation: Low inhalation toxicity based on toxicity studies.
Medical Conditions Aggravated by Exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

Potential Environmental Effects:
This product is toxic to plants. Drift and run-off may be hazardous to plants in water adjacent to treated areas.

See Section 12: ECOLOGICAL INFORMATION for more information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Imazapyr	81334-34-1	7.78
Diuron	330-54-1	62.22
Other Ingredients		30.00

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If on Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.
If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flash Point: Not Applicable
Autoignition Temperature: Not Applicable **Flammability Limits:** Not determined

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.
Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.
Hazardous Decomposition Materials (Under Fire Conditions): Organochloric compounds, carbon monoxide, carbon dioxide, and nitrogen oxides

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 1 **Flammability:** 0 **Reactivity:** 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

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: Avoid creation of dusty conditions. 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:
Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage:
Store in a cool, dry area in original container. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

Spray solutions of this product should be mixed, stored, and applied **ONLY** in stainless steel, fiberglass, plastic, and plastic-lined steel containers. **DO NOT** mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection: To avoid contact with skin wear long sleeved shirt and long pants, shoes plus socks, chemical resistant gloves made of any waterproof material such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or viton ≥ 14 mils. When mixing, loading, or cleaning equipment a chemical resistant apron must be worn. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection: NIOSH approved particulate filtering respirator with N or R, P or HE class filter media. The respirator should have a NIOSH approval number prefix "TC-84A". Groundboom applications do not need to wear a respirator.
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:

	OSHA		ACGIH		
Component	TWA	STEL	TWA	STEL	Unit
Diuron	NE	NE	10	NE	mg/m^3
Imazapyr	NE	NE	NE	NE	

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Beige to brown granules with no odor

Boiling Point:	Not applicable	**Solubility in Water:**	Soluble
Density:	5.32 pounds / gallon	**Specific Gravity:**	0.639 g/ml (tapped)
Evaporation Rate:	Not applicable	**Vapor Density:**	Not determined
Freezing Point:	Not applicable	**Vapor Pressure:**	Not determined
pH:	2.5 – 3.0 (1% w/w solution)	**Viscosity:**	Not applicable

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

Chemical Stability: This material is stable under normal handling and storage conditions.
Conditions to Avoid: Excessive heat. Do not store near heat or flame. Spray solutions of this product should be mixed, stored, and applied **ONLY** in stainless steel, fiberglass, plastic, and plastic-lined steel containers. **DO NOT** mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.
Incompatible Materials: Strong oxidizing agents: bases and acids.
Hazardous Decomposition Products: Under fire conditions may produce organochloric compounds, carbon monoxide, carbon dioxide, and nitrogen oxides.
Hazardous Reactions: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:
Data from laboratory studies conducted on a similar, but not identical, formulation:
Oral: Rat LD_{50}: >5,000 mg/kg
Dermal: Rat LD_{50}: >2,000 mg/kg
Inhalation: Rat 4-hr LC_{50}: 3.7 mg/l
Eye Irritation: Rabbit: Moderately irritating
Skin Irritation: Rabbit: Slightly irritating
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to diuron may cause reduced body weight gain, enlarged spleen, increased liver and kidney weights, and effects in blood, bladder and kidney. For imazapyr, no adverse effects at approximately 1,700 mg/kg/day (highest dose tested).
Carcinogenicity / Chronic Health Effects: Chronic effects from diuron in blood, bladder and kidney. In animal studies with diuron, an increase in urinary bladder tumors in rats and an increase of mammary tumors in mice were observed at very high doses in excess of 600 mg/kg/day. Imazapyr did not cause cancer in laboratory animals. EPA has classified imazapyr as a Group E (evidence of non-carcinogenicity for humans) carcinogen.
Reproductive Toxicity: Diuron did not demonstrate reproductive effects in animal studies. Similarly, the results of the animal studies with imazapyr gave no indication of a fertility impairing effect.
Developmental Toxicity: Diuron did not cause developmental effects in rabbits. In rat studies, effects were observed only at maternally toxic dose levels. No indications of a developmental toxic / teratogenic effect were seen in animal studies with imazapyr.
Genotoxicity: Studies indicate that diuron and imazapyr did not produce genetic damage in in vitro bacterial cell cultures or in vivo mammalian animal studies.

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

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Diuron:

96-hour LC_{50} Bluegill:	2.8 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	1,730 mg/l
96-hour LC_{50} Rainbow Trout:	1.95 mg/l	Mallard Duck Oral LD_{50}:	>2,000 mg/kg
96-hour LC_{50} Fathead Minnow:	14.2 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,000 mg/l
48-hour EC_{50} Daphnia:	1.4 mg/l		

Data on Imazapyr:

96-hour LC_{50} Bluegill:	>100 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	>5,000 mg/l
96-hour LC_{50} Rainbow Trout:	>100 mg/l	Bobwhite Quail Oral LD_{50}:	>2,150 mg/kg
48-hour EC_{50} Daphnia:	>100 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,000 mg/l
14-day EC_{50} Duckweed:	0.024 mg/l	Mallard Duck Oral LD_{50}:	>2,150 mg/kg
7-day EC_{50} Green Algae:	71 mg/l	Honey Bee LD_{50}:	>100 mg/bee

Environmental Fate:

Diuron is mobile and very persistent in soils. Binding or absorption of diuron to soil is highly correlated with soil organic matter. The average half-life in soils ranges from months to a year. The major route of dissipation for diuron in the environment is microbial degradation. Diuron also degrades through photolysis in both water and soil, but at a slower rate.

Imazapyr is degraded by microbial metabolism and can be relatively persistent in soils. It has an average half-life in soils that ranges from 2 weeks to 5 months. Half-lives tend to be shorter in forest litter and soils. Imazapyr is water-soluble and variably binds to organic materials in soils. Although the potential to leach is high, leaching is limited under typical field conditions. In water, imazapyr can be rapidly degraded by photolysis with a half-life averaging 2 days. Due to its rapid photodegradation by sunlight, water contamination by imazapyr is generally not of concern.

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.

Container Handling and Disposal:

Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay away from smoke.

14. TRANSPORTATION INFORMATION

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

DOT

≤ 160 pounds per completed package
Non Regulated

> 160 pounds per completed package
UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ (Diuron)

> 882 pounds per completed package
UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ (Diuron), Marine pollutant

IMDG
UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ (Diuron), Marine pollutant

IATA
Non regulated

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

15. REGULATORY INFORMATION

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; Chronic

Section 313 Toxic Chemical(s):
Diuron (CAS No. 330-54-1) - <63.00% by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:
Diuron (CAS No. 330-54-1) – 100 pounds

RCRA Waste Code:
None

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

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

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Nufarm Imazuron Herbicide**
EPA Reg. No.: 228-654
Synonyms: Mixture of Imazapyr and Diuron
Product Type: Herbicide

Company Name: Nufarm Americas Inc.
150 Harvester Drive, Suite 200
Burr Ridge, IL 60527

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

Date of Issue: August 23, 2010 **Supersedes:** New
Sections Revised: New

2. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance and Odor: Beige to brown granules with no odor
Warning Statements: CAUTION. Keep out of reach of children. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist.

Potential Health Effects:
Likely Routes of Exposure: Inhalation, eye and skin contact.
Eye Contact: Moderately irritating based on toxicity studies.
Skin Contact: Slightly toxic and slightly irritating based on toxicity studies.
Ingestion:. Slightly toxic if ingested based on toxicity studies.
Inhalation: Low inhalation toxicity based on toxicity studies.
Medical Conditions Aggravated by Exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

Potential Environmental Effects:
This product is toxic to plants. Drift and run-off may be hazardous to plants in water adjacent to treated areas.

See Section 12: ECOLOGICAL INFORMATION for more information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Imazapyr	81334-34-1	7.78
Diuron	330-54-1	62.22
Other Ingredients		30.00

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If on Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.
If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flash Point: Not Applicable
Autoignition Temperature: Not Applicable **Flammability Limits:** Not determined

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.
Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.
Hazardous Decomposition Materials (Under Fire Conditions): Organochloric compounds, carbon monoxide, carbon dioxide, and nitrogen oxides

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 1 **Flammability:** 0 **Reactivity:** 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

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: Avoid creation of dusty conditions. 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:
Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage:
Store in a cool, dry area in original container. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

Spray solutions of this product should be mixed, stored, and applied **ONLY** in stainless steel, fiberglass, plastic, and plastic-lined steel containers. **DO NOT** mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection: To avoid contact with skin wear long sleeved shirt and long pants, shoes plus socks, chemical resistant gloves made of any waterproof material such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or viton ≥ 14 mils. When mixing, loading, or cleaning equipment a chemical resistant apron must be worn. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection: NIOSH approved particulate filtering respirator with N or R, P or HE class filter media. The respirator should have a NIOSH approval number prefix "TC-84A". Groundboom applications do not need to wear a respirator.
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:

	OSHA		ACGIH		
Component	TWA	STEL	TWA	STEL	Unit
Diuron	NE	NE	10	NE	mg/m^3
Imazapyr	NE	NE	NE	NE	

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Beige to brown granules with no odor

Boiling Point:	Not applicable	**Solubility in Water:**	Soluble
Density:	5.32 pounds / gallon	**Specific Gravity:**	0.639 g/ml (tapped)
Evaporation Rate:	Not applicable	**Vapor Density:**	Not determined
Freezing Point:	Not applicable	**Vapor Pressure:**	Not determined
pH:	2.5 – 3.0 (1% w/w solution)	**Viscosity:**	Not applicable

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

Chemical Stability: This material is stable under normal handling and storage conditions.
Conditions to Avoid: Excessive heat. Do not store near heat or flame. Spray solutions of this product should be mixed, stored, and applied **ONLY** in stainless steel, fiberglass, plastic, and plastic-lined steel containers. **DO NOT** mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.
Incompatible Materials: Strong oxidizing agents: bases and acids.
Hazardous Decomposition Products: Under fire conditions may produce organochloric compounds, carbon monoxide, carbon dioxide, and nitrogen oxides.
Hazardous Reactions: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:
Data from laboratory studies conducted on a similar, but not identical, formulation:
Oral: Rat LD_{50}: >5,000 mg/kg
Dermal: Rat LD_{50}: >2,000 mg/kg
Inhalation: Rat 4-hr LC_{50}: 3.7 mg/l
Eye Irritation: Rabbit: Moderately irritating
Skin Irritation: Rabbit: Slightly irritating
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to diuron may cause reduced body weight gain, enlarged spleen, increased liver and kidney weights, and effects in blood, bladder and kidney. For imazapyr, no adverse effects at approximately 1,700 mg/kg/day (highest dose tested).
Carcinogenicity / Chronic Health Effects: Chronic effects from diuron in blood, bladder and kidney. In animal studies with diuron, an increase in urinary bladder tumors in rats and an increase of mammary tumors in mice were observed at very high doses in excess of 600 mg/kg/day. Imazapyr did not cause cancer in laboratory animals. EPA has classified imazapyr as a Group E (evidence of non-carcinogenicity for humans) carcinogen.
Reproductive Toxicity: Diuron did not demonstrate reproductive effects in animal studies. Similarly, the results of the animal studies with imazapyr gave no indication of a fertility impairing effect.
Developmental Toxicity: Diuron did not cause developmental effects in rabbits. In rat studies, effects were observed only at maternally toxic dose levels. No indications of a developmental toxic / teratogenic effect were seen in animal studies with imazapyr.
Genotoxicity: Studies indicate that diuron and imazapyr did not produce genetic damage in in vitro bacterial cell cultures or in vivo mammalian animal studies.

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

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Diuron:

96-hour LC_{50} Bluegill:	2.8 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	1,730 mg/l
96-hour LC_{50} Rainbow Trout:	1.95 mg/l	Mallard Duck Oral LD_{50}:	>2,000 mg/kg
96-hour LC_{50} Fathead Minnow:	14.2 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,000 mg/l
48-hour EC_{50} Daphnia:	1.4 mg/l		

Data on Imazapyr:

96-hour LC_{50} Bluegill:	>100 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	>5,000 mg/l
96-hour LC_{50} Rainbow Trout:	>100 mg/l	Bobwhite Quail Oral LD_{50}:	>2,150 mg/kg
48-hour EC_{50} Daphnia:	>100 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,000 mg/l
14-day EC_{50} Duckweed:	0.024 mg/l	Mallard Duck Oral LD_{50}:	>2,150 mg/kg
7-day EC_{50} Green Algae:	71 mg/l	Honey Bee LD_{50}:	>100 mg/bee

Environmental Fate:

Diuron is mobile and very persistent in soils. Binding or absorption of diuron to soil is highly correlated with soil organic matter. The average half-life in soils ranges from months to a year. The major route of dissipation for diuron in the environment is microbial degradation. Diuron also degrades through photolysis in both water and soil, but at a slower rate.

Imazapyr is degraded by microbial metabolism and can be relatively persistent in soils. It has an average half-life in soils that ranges from 2 weeks to 5 months. Half-lives tend to be shorter in forest litter and soils. Imazapyr is water-soluble and variably binds to organic materials in soils. Although the potential to leach is high, leaching is limited under typical field conditions. In water, imazapyr can be rapidly degraded by photolysis with a half-life averaging 2 days. Due to its rapid photodegradation by sunlight, water contamination by imazapyr is generally not of concern.

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.

Container Handling and Disposal:

Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay away from smoke.

14. TRANSPORTATION INFORMATION

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

DOT

≤ 160 pounds per completed package
Non Regulated

> 160 pounds per completed package
UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ (Diuron)

> 882 pounds per completed package
UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ (Diuron), Marine pollutant

IMDG
UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ (Diuron), Marine pollutant

IATA
Non regulated

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

15. REGULATORY INFORMATION

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; Chronic

Section 313 Toxic Chemical(s):
Diuron (CAS No. 330-54-1) - <63.00% by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:
Diuron (CAS No. 330-54-1) – 100 pounds

RCRA Waste Code:
None

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

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

Loveland PRODUCTS

MAKAZE® HERBICIDE

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

ACTIVE INGREDIENT	
***Glyphosate, N-(phosphonomethyl)glycine, in the form of its isopropylamine salt**	**41.0%**
OTHER INGREDIENTS:	**59.0%**
TOTAL	**100.0%**

*Contains 480 grams per liter or 4 pounds per U.S. gallon of the active ingredient, glyphosate, in the form of its isopropylamine salt. Equivalent to 356 grams per liter or 3 pounds per U.S. gallon of the acid, glyphosate.

Licensed for Roundup Ready® alfalfa, cotton, corn, canola, Flex cotton, sugarbeets and soybeans.

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID

If in eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	• 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.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. **FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565.**

EPA REG. NO. 34704-890

EPA EST. NO. 34704-MS-001

NET CONTENTS 1 GAL. (3.78 L)

011509 V5D 09G10

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing.

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 may 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 more than 24 hours.

PERSONAL PROTECTIVE EQUIPMENT: (PPE)
Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.
Applicators and other handlers must wear:
- Long-sleeved shirt and long pants,
- Shoes plus socks,
- 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 no such instructions for washables exist, 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 Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

Users should:
- 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.

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 washwaters.

PHYSICAL OR CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, 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 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.

Read the entire label before using this product. Use only according to label instructions. Read the "CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY" statement at the end of the label before buying or using. If terms are unacceptable, return at once unopened.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a 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 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 working 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,
- 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.

GENERAL INFORMATION

Product Description: This product is a postemergent, systemic herbicide with no soil residual activity. It is generally non-selective and gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid. It may be applied through most standard industrial or field-type sprayers after dilution and through mixing with water or other carriers according to label instructions. Additional surfactants, additives containing surfactant, buffering agents, pH adjusting agents, or defoaming products may be utilized if desired. Adjuvants such as **Weather Gard Complete, LI 700®,** or **Liberate®** used at 0.25% to 0.50% v/v. The use of Unfoamer is for defoaming.

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See the MIXING section of this label for instructions.

The use of **Compadre®** at .125% v/v is for drift control and defoaming.

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

Stage of Weeds: Annual weeds are easiest to control when they are small. Best control of most perennial weeds is obtained when treatment is made at late growth stages approaching maturity. Refer to the annual, perennial, woody brush and trees rate tables for recommendations for specific weeds.

Always use the higher rate of this product per acre within the specified range when weed growth is heavy or dense weeds are growing in an undisturbed (noncultivated) area.

Do not treat weeds under poor growing conditions such as drought stress, disease or insect damage, as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust.

Cultural Considerations: Reduced control may result when applications are made to annual or perennial weeds that have been mowed, grazed, or cut, and have not been allowed to regrow to the specified stage for treatment.

INFORMATION ON WEED RESISTANCE

Glyphosate, the active ingredient in this product, is a Group 9 herbicide. Target site resistance to Group 9 herbicides is rare. Although rare in occurrence, any weed population may contain plants naturally resistant to Group 9 herbicides. Weed species resistant to Group 9 herbicides may be effectively managed utilizing another herbicide from a different Group or using other cultural practices.

Weed resistance management recommendations for Group 9 herbicides are:

- Ensure optimum weed control by making applications at the right time (correct weed size) and utilizing the label rate for the most difficult to control weed in your field.
- Base decisions on local needs and use the tool(s) necessary to obtain optimum weed control and minimize weeds escapes.
- Avoid tank-mixtures that reduce this product's efficacy (through antagonism) or which encourage rates of this product below the labeled rates.
- Scout treated weed populations for escapes 2-4 weeks after application.
- Report any incidence of repeated non-performance of this product on a particular weed to the local retailer, county extension agent, or Loveland Products, Inc. representative.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate control.

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

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

No Soil Activity: Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or root stocks of perennials will not be affected by the herbicide and will continue to grow.

Tank Mixing: This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive label directions for each product in the mixture.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

Buyer and all users are responsible for 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 in this label. Mixing this product with herbicides or other materials not specified on this label may result in reduced performance.

Annual Maximum Use Rate: Except as otherwise specified in a crop section of this label, the combined total of all treatments must not exceed 8 quarts of this product per acre per year.

For noncrop uses, the combined total of all treatments must not exceed 10.6 quarts of this product per acre per year.

ATTENTION

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

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

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants, or other areas on which treatment was not intended. The likelihood of injury occurring from the use of 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) which are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences. Keep container closed to prevent spills and contamination.

MIXING

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

NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS VISIBLY MUDDY WATER OR WATER FROM PONDS AND DITCHES THAT IS NOT CLEAR.

Mixing with Water

This product mixes readily with water. Mix spray solutions of this product as follows: Fill the mixing or spray tank with the required amount of water. Add the specified amount of this product near the end of the filling process and mix well. Use caution to avoid siphoning back into the carrier source. Use approved anti-back-siphoning devices where required by state or local regulations. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

Tank Mixture Procedure

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.
Mix labeled tank mixtures of this product with water as follows:

1. Place a 20 to 35-mesh screen or wetting basket over filling port.
2. Through the screen, fill the spray tank one-half full with water and start agitation.
3. If a wettable powder is used, make a slurry with the water carrier, and add it SLOWLY through the screen into the tank. Continue agitation.
4. If a flowable formulation is used, premix one part flowable with one part water. Add diluted mixture SLOWLY through the screen into the tank. Continue agitation.
5. If an emulsifiable concentrate formulation is used, premix one part emulsifiable concentrate with two parts water. Add diluted mixture slowly through the screen into the tank. Continue agitation.
6. Continue filling the spray tank with water and add the required amount of this product near the end of the filling process.
7. When nonionic surfactant is utilized, add this to the spray tank before completing the filling process.
8. Add individual formulations to the spray tank as follows: wettable powder, flowable, emulsifiable concentrate, drift control additive and water soluble liquid.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance.

Refer to the "Tank Mixing" section of "GENERAL INFORMATION" for additional precautions.

Mixing for Hand-held Sprayers

Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution Desired Volume	Amount of Makaze					
	½%	1%	1½%	2%	5%	10%
1 Gal	⅔ oz	1⅓ oz	2 oz	2 ⅔ oz	6½ oz	13 oz
25 Gal	1 pt	1qt	1½ qt	2 qt	5 qt	10 qt
100 Gal	2 qt	1 gal	1½ gal	2 gal	5 gal	10 gal

2 tablespoons = 1 fluid ounce

For use in knapsack sprayers, it is suggested that the specified amount of this product be mixed with water in a larger container. Fill sprayer with the mixed solution.

Ammonium Sulfate

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

NOTE: When using ammonium sulfate, apply this product at rates specified in this label. Lower rates will result in reduced performance.

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Colorants or Dyes

Agriculturally approved colorants or marking dyes may be added to this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilutions. Use colorants or dyes according to the manufacturer's recommendations.

Drift Control Additives

Drift control additives may be used with all equipment types, except wiper applicators, sponge bars and CDA equipment. When a drift control additive is used, read and carefully observe the cautionary statements and other information appearing on the additive label. The use of **Compadre** at .125% v/v is for drift control and defoaming.

APPLICATION EQUIPMENT AND TECHNIQUES

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

This product may be applied with the following application equipment:

Aerial – Fixed Wing and Helicopter

Ground Broadcast Spray – Boom or boomless systems, pull-type sprayer, floaters, pick-up sprayers, spray coupes and other ground broadcast equipment.

Hand-Held and High-Volume Spray Equipment – Knapsack and backpack sprayers, pump-up pressure sprayers, handguns, handwands, mistblowers*, lances and other hand-held 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 Equipment – Recirculating sprayers, shielded and hooded sprayers, wiper applicators and sponge bars.

Injection Systems – Aerial or ground injection sprayers.

Controlled Droplet Applicator (CDA) – Hand-held or boom-mounted applicators which produce a spray consisting of a narrow range of droplet sizes.

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

AERIAL SPRAY DRIFT MANAGEMENT

Spray Drift Management

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator is responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed ¾ 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 should be observed.

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

Aerial Drift Reduction Advisory

(This section is advisory in nature and does not supersede the mandatory label requirements)

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 recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of nozzles – Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation – Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- Nozzle Type – Use a nozzle type that is designated 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

For some use patterns, reducing the effective boom length to less than ¾ of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Applications should not be made at a height greater than 10 feet above the top of the target 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 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

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

Temperature Inversions

Applications should not occur during a 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 smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

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

Aerial Equipment

DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL. This product plus Rifle® or 2,4-D tank mixtures may not be applied by air in California.

Use the specified rates of this herbicide in 3 to 15 gallons of water per acre unless otherwise specified on this label. Unless otherwise specified, do not exceed 1 quart per acre. Aerial applications of this product may be made in annual cropping conventional tillage systems. Fallow and reduced tillage systems and preharvest applications. Refer to the individual use area sections of this label for volumes and application rates.

Avoid direct application to any body of water.

AVOID DRIFT – DO NOT APPLY DURING LOW-LEVEL INVERSION CONDITIONS, WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION WHICH FAVORS DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations which dispense spray as fine spray droplets. Do not angle nozzles forward into the airstream and do not increase spray volume by increasing nozzle pressure.

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

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 MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR ARE MOST SUSCEPTIBLE. The maintenance of an organic coating (paint), which meets aerospace specification MIL-C-38413, may prevent corrosion.

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.

Use the specified rate of this product 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 are recommended.

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Applications should typically 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% of the length of the wingspan or rotor. In many cases, reducing the distance to 65% 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 wind speeds are in excess of 10 miles per hour.

Do not apply this product 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 may occur when wind speeds are less than 2 mph.

Use the following guidelines when applications are made near crops or other desirable vegetation:

1. Do not apply within 100 feet of any desirable vegetation or crops.
2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crops, do not apply within 500 feed upwind of the desirable vegetation or crops.
3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crops will likely require buffer zones in excess of 500 feet.

Arkansas, Louisiana, Mississippi, Missouri, and Tennessee Only:
This product controls annual and perennial weeds listed on this label prior to planting or emergence of corn, cotton, rice, sorghum and soybeans; prior to the harvest of cotton and soybeans; and following the harvest of any crop in the fall via aerial applications in these locations.

Aerial applications of this product may be made in fallow systems and conventional, reduced and zero tillage systems. For applications via aerial equipment, use the specified rates of this product in 3 to 10 gallons of water per acre. Do not exceed a rate of 3 quarts per acre.

The likelihood of injury occurring from the use of this product is greatest when winds are gusty or in excess of 5 miles per hour or when other conditions, including lesser velocities, will allow spray drift to occur.

Ground Broadcast Equipment
Use the specified rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified. As density of weeds increases, spray volume should be increased within the specified range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

Hand-Held and High-Volume Equipment
Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For control of weeds listed in the annual weeds rate tables, apply a 0.5 percent solution of this product to weeds less than 6 inches in height or runner length. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1 percent solution.

For best results, use a 2 percent solution on harder-to-control perennials, such as bermudagrass, dock, field bindweed, hemp dogbane, milkweed and Canada thistle.

When using application methods which result in less than complete coverage, use a 5 percent solution for annual and perennial weeds and a 5 to 10 percent solution for woody brush and trees.

Selective Equipment
This product may be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators or sponge bars after dilution and thorough mixing with water to listed weeds growing in any noncrop site specified on this label and only when specifically directed in cropping systems.

A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation, while spray solution not intercepted by weeds is collected and returned to the spray tank for reuse.

A shielded or hooded applicator directs the herbicide solution onto weeds, while shielding desirable vegetation from the herbicide.

A wiper or sponge applicator applies the herbicide solution onto weeds by rubbing the weed with an absorbent material containing the herbicide solution.

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION

Contact of the herbicide with desirable vegetation may result in damage or destruction. Applicators used above desirable vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam or splatter of the herbicide solution settling on desirable vegetation may result in discoloration, stunting or destruction.

Applications made above the crops should be made when the weeds are a minimum of 6 inches above the desirable vegetation. Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations or when the height of the weeds varies so that not all weeds are contacted. In these instances, repeat treatment may be necessary.

Shielded and hooded applicators
Use nozzles that provide uniform coverage within the treated area. Keep shields on these sprayers adjusted to protect desirable vegetation. EXTREME CARE MUST BE EXERCISE TO AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Wiper applicators and sponge bars
Wiper applicators are devices that physically wipe appropriate amounts of this product directly onto the weed.

Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 mph. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1 - day period, as reduced activity may result from use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

Do not add surfactant to the herbicide solution.

For Rope or Sponge Wick Applicators – Mix 1 gallon of this product in 2 gallons of water to prepare a 33 percent solution. Apply this solution to weeds listed in this section.

For Porous-Plastic Applicators – Solutions ranging from 33 to 100 percent of this product in water may be used in porous-plastic wiper applicators.

When applied as directed, this product CONTROLS the following weeds:

Corn, volunteer	Sicklepod
Panicum, Texas	Spanishneedles
Rye, common	Starbur, bristly
Shattercane	

When applied as directed, this product SUPPRESSES the following weeds:

Beggarweed, Florida	Ragweed, common
Bermudagrass	Ragweed, giant
Dogbane, hemp	Smutgrass
Dogfennel	Sunflower
Guineagrass	Thistle, musk
Milkweed	Vaseygrass
Nightshade, silverleaf	Velvetleaf
Pigweed, redroot	

Injection Systems
This product may be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the concentrate of other products when using injection systems.

CDA Equipment
The rate of this product applied per acre by vehicle-mounted CDA Equipment must not be less than the amount specified in this label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 3 to 15 gallons of water per acre.

For the control of annual weeds with hand-held CDA units, apply a 20 percent solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 1.5 mph (1 quart per acre). For the control of perennial weeds, apply a 20 to 40 percent solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 0.75 mph (2 to 4 quarts per acre).

Controlled droplet application equipment produces a spray pattern which is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other green tissue of desirable vegetation, as damage or destruction may result.

CROPS (Alphabetical)
This section is organized alphabetically by crop category. There may be several labeled crops listed in a crop category.

Unless otherwise specified, applications may be made to control any weeds listed in the annual, perennial and woody brush tables. Also refer to the "SELECTIVE EQUIPMENT" section.

For any crop not listed in this "CROPS" section, applications must be made at least 30 days prior to planting.

For broadcast postemergent treatments, do not harvest or feed treated vegetation for 8 weeks following application, unless otherwise specified.

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When applying this product prior to transplanting crops into plastic mulch, residues may be removed from the plastic by 0.5 inches of water via sprinkler irrigation or natural rainfall.

The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredients, whether applied as mixtures or separately. Calculate application rates and ensure that the **total use** of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rate.

ALFALFA, CLOVER, AND OTHER FORAGE LEGUMES

Labeled Crops: Alfalfa, clover, kudzu, lespedeza, lupin, sainfoin, trefoil, velvet bean, vetch, crown vetch, milk vetch

Types of Applications: Dormant, preplant, preemergence, at-planting, spot treatment, wiper applicators, renovation, preharvest

Dormant (Alfalfa only)
Use Instructions: This product will control or suppress many weeds including quackgrass, downy brome and cheatgrass in dormant alfalfa. Apply 8 to 12 ounces per acre of this product. Apply in the spring to alfalfa that is dormant. Applications should be made after spring temperatures have warmed enough to encourage resumption of weed growth, but prior to initiation of trifoliate leaf expansion of the alfalfa. Applications made after expansion of the first trifoliate leaf of the alfalfa will cause growth reduction and reduced crop yield.

Precautions, Restrictions: Do not use ammonium sulfate when spraying dormant alfalfa with Makaze. Do not use this product where a slight yield reduction in the first cutting of alfalfa cannot be tolerated. Do not make more than one application per year. Allow 36 hours after application before grazing livestock or harvesting. Slight discoloration of the alfalfa may occur, but the alfalfa will regreen and regrow under moist soil conditions as effects of this product wear off. Application of this product can cause crop injury. Any crop injury is the sole responsibility of the applicator.

Preplant, Preemergence, and At-planting
Use Instructions: This product may be applied before, during or after planting alfalfa and clover. Applications must be made prior to emergence of the crop.

Precautions, Restrictions: Remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Preharvest (Alfalfa only)
Use Instructions: This product may be used in declining alfalfa stands or any stand of alfalfa where crop destruction is acceptable. This application will severely injure or destroy the stand of alfalfa. This product will control annual and perennial weeds including quackgrass, when applied prior to the harvest of alfalfa. The treated crop and weeds can be harvested and fed to livestock after 36 hours. Allow a minimum of 36 hours between application and harvest. Use up to 1 quart of this product per acre. Applications may be made at any time of the year. Make only one application to an existing stand of alfalfa per year. For control of quackgrass, apply in the spring, late summer or fall when quackgrass is actively growing. Treatments for quackgrass must be followed by deep tillage for complete control.

Precautions, Restrictions: Do not apply more than 1 quart of this product per acre as a preharvest treatment. Do not use for alfalfa grown for seed, as a reduction in germination or vigor may occur.

Spot treatment or Wiper applications (Alfalfa and Clover only)
Use Instructions: This product may be applied as a spot treatment in alfalfa or clover. This product may be applied with wiper applicators to control or suppress the weeds listed under "WIPER APPLICATORS" in the "SELECTIVE EQUIPMENT" section of this label. Applications may be made in the same area at 30-day intervals.

Precautions, Restrictions: Remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Renovation
Use Instructions: This product may be applied as a broadcast spray to existing stands of alfalfa, clover, and other labeled forage legumes. Labeled crops may be planted into the treated area.

Precautions, Restrictions: Remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

ASPARAGUS

Types of Applications: Preplant, preemergence, spot treatment, postharvest

Preplant, Preemergence
Use Instructions: This product may be applied prior to emergence of asparagus.

Precautions, Restrictions: Do not apply within a week before the first spears emerge.

Spot Treatment
Use Instructions: This product may be applied immediately after cutting, but prior to the emergence of new spears.

Precautions, Restrictions: Do not treat more than 10 percent of the total field area to be harvested. Do not harvest within 5 days of treatment.

Postharvest
Use Instructions: This product may be applied after the last harvest and all spears have been removed. If spears are allowed to regrow, delay application until ferns have developed. Delayed treatments should be applied as a directed or shielded spray in order to avoid contact of the spray with ferns, stems or spears.

Precautions, Restrictions: Direct contact of the spray with the asparagus may result in serious crop injury. Select and use recommended types of spray equipment for postemergence postharvest applications. A directed spray is any application where the spray pattern is aligned in such a way as to avoid direct contact of the spray with the crop. A shielded spray is any application where a physical barrier is positioned and maintained between the spray and the crop to prevent contact of spray with the crop.

CEREAL CROPS

Labeled Crops: Barley, Buckwheat, Millet (Pearl, Proso), Oats, Rice, Teosinte, Triticale, Wheat (All), Wild rice.

Types of Applications: Preplant, preemergence, at-planting, spot treatment (except rice), post-harvest, preharvest (wheat only), wiper applicators (wheat only)

Do not treat rice fields or levees when the field contains floodwater.

Preplant, Preemergence and At-planting
Use Instructions: This product may be applied before, during, or after planting of cereal crops. Applications must be made prior to emergence of the crop.

Spot treatment (except rice)
Use Instructions: This product may be applied as a spot treatment in cereal crops. Apply this product before heading in small grains.

Precautions, Restrictions: Do not treat more than 10 percent of the total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Postharvest
Use Instructions: This product may be applied after harvest of cereal crops. Higher rates may be required for control of large weeds which were growing in the crop at the time of harvest. Tank mixtures of 2,4-D or dicamba may be used.

Precautions, Restrictions: For any crop not listed on this label, applications must be made at least 30 days prior to planting the next crop. Do not harvest or feed treated vegetation for 8 weeks following application.

Preharvest (wheat only)
Use Instructions: This product provides weed control when applied prior to harvest of wheat. Apply after the hard-dough stage of grain (30% or less grain moisture) and at least 7 days prior to harvest. Wheat stubble may be grazed immediately after harvest.

The product may be applied using either aerial or ground spray equipment. For ground applications, apply this product in 10 to 20 gallons of water per acre. For aerial applications, apply this product in 3 to 10 gallons of water per acre.

Precautions, Restrictions: Do not apply more than 1 quart of this product per acre. Do not apply to wheat grown for seed, as a reduction in germination or vigor may occur.

Wiper applications (wheat only)
Use Instructions: Wiper applications may be used in wheat. To control common rye or cereal rye, apply after the weeds have headed and achieved maximum growth, when the rye is at least 6 inches above the wheat crop.

Precautions, Restrictions: Allow at least 35 days between application and harvest. Do not use roller applicators.

For nonselective control of listed annual weeds in small grain cropping systems (South Dakota only)
Use Instructions: For ground applications, use 3 to 5 gallons of water per acre. For aerial applications, use 2 to 3 gallons of water per acre.

Precautions, Restrictions: The likelihood of injury occurring from the use of this product is greatest when winds are gusty or in excess of 5 miles per hour or when other conditions, including lesser wind velocities, will allow spray drift to occur. Adjust boom height on ground equipment to prevent streaked, overlapped or uneven applications. Avoid spraying when weeds are subject to moisture stress, when dust is on foliage, or when straw canopy covers the weeds.

Red Rice Control Prior To Planting Rice (Texas only)
Use Instructions: Apply 1.5 quarts of this product in 5 to 10 gallons of water per acre. Flush fields prior to application to obtain uniform germination and stand of red rice. Make application when the majority of the red rice plants are in the 2-leaf stage and no more than 4 inches tall. Red rice plants with less than 2 true leaves may only be partially controlled.

Precautions, Restrictions: Avoid spraying during low humidity conditions, as reduced control may result. DO NOT TREAT RICE FIELDS OR LEVEES WHEN THE FIELDS CONTAIN FLOOD WATER. DO NOT RE-FLOOD TREATED FIELDS FOR 8 DAYS FOLLOWING APPLICATION.

CHRISTMAS TREES

Types of Applications: Post-directed, spot treatment, site preparation

Post-directed, Spot treatment
Use Instructions: This product may be used as a post-directed spray and spot treatment around established Christmas trees.

Precautions, Restrictions: Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. THIS

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PRODUCT IS NOT FOR USE AS AN OVER-THE-TOP BROADCAST SPRAY IN CHRISTMAS TREES. Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of established Christmas trees.

Site preparation
Use Instructions: This product may be used prior to planting Christmas trees.

Precautions, Restrictions: Precautions should be taken to protect nontarget plants during site preparation applications.

CITRUS CROPS

Labeled Crops: Calamondin, Chironja, Citron, Citrus Hybrids, Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Orange (All), Pummelo, Tangelo, Tangor

Types of Applications: General weed control, middles (between rows of trees), strips (in row of trees), selective equipment.

NOTE: FOR GENERAL USE DIRECTIONS, SEE THE "TREE, NUT AND VINE (GENERAL)" SECTION. THE FOLLOWING DIRECTIONS ARE SPECIFIC TO CITRUS CROPS.

Florida and Texas only: For burndown or control of the weeds listed below, apply the specified rates of this product in 3 to 30 gallons of water per acre. Where weed foliage is dense, use 10 to 30 gallons of water per acre.

For goatweed, apply 2 to 3 quarts of this product per acre. Apply in 20 to 30 gallons of water per acre when plants are actively growing. Use 2 quarts per acre when plants are less than 8 inches tall and 3 quarts per acre when plants are greater than 8 inches tall. If goatweed is greater than 8 inches tall, the addition of Krovar® II or Karmex® may improve control. Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Perennial weeds:

S=Suppression B=Burndown
PC=Partial Control C=Control

Weed Species	Makaze Rate Per Acre			
	1 QT	2 QT	3 QT	5 QT
Bermudagrass	B	-	PC	C
Guineagrass				
Texas and Florida Ridge	B	C	C	C
Florida Flatwoods	-	B	C	C
Paragrass	B	C	C	C
Torpedograss	S	-	PC	C

Precautions, Restrictions: Allow a minimum of 1 day between last application and harvest.

CONSERVATION RESERVE PROGRAM (CRP)

Types of Applications: Renovation (rotating out of CRP), site preparation, dormant, wiper
Rotating out of CRP, Site preparation
Use Instructions: This product may be used to prepare CRP land for crop production.

Dormant, Wiper
Use Instructions: This product may be used to suppress competitive growth and seed production of undesirable vegetation in CRP acres. Such applications may be made with wiper application equipment or as a broadcast or spot treatment to dormant CRP grasses. For selective applications with broadcast spray equipment, apply 12 to 16 fluid ounces of the product per acre in early spring before desirable CRP grasses, such as crested and tall wheatgrass, break dormancy and initiate green growth. Late fall applications can be made after desirable perennial grasses have reached dormancy.

Precautions, Restrictions: Some stunting of CRP perennial grasses will occur if broadcast applications are made when plants are not dormant.

CORN

Types of Corn: Field corn, seed corn, sweet corn and popcorn

Types of Applications: Preplant, preemergence, at-planting, spot treatment, hooded sprayers, preharvest, post-harvest

Preplant, Preemergence and At-planting
Use Instructions: This product may be applied before, during or after planting corn. Applications must be made prior to emergence of the crop.

The following tank mixtures may be applied before, during or after planting in conventional tillage systems, into a cover crop, established sod or in previous crop residue.

Apply these tank mixtures in 10 to 20 gallons of water or 10 to 60 gallons of nitrogen solution per acre. For Southern states, do not apply in nitrogen solutions to tough-to-control grasses such as barnyardgrass, fall panicum, broadleaf signalgrass, annual ryegrass and any perennial weeds. See the map in the Annual Weeds section of this label for areas included in this recommendation.

ATRAZINE	GUARDSMAN MAX®	LOROX®
BICEP MAGNUM®	HARNESS®	MICRO-TECH®
BICEP II MAGNUM®	HARNESS® XTRA	OUTLOOK®
BULLET®	HARNESS® XTRA 5.6L	RIFLE®
CADENCE®	INTRRO®/ALACHLOR	RIFLE PLUS®
CYANAZINE	LARIAT®	SIMAZINE
DUAL® II MAGNUM®	LINEX®	STEALTH®
		TOPNOTCH®

For improved burndown, this product may be tank mixed with 2,4-D or dicamba.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

Annual weeds – For difficult-to-control weeds such as fall panicum, barnyardgrass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall, and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1 to 1.5 pints of this product per acre when weeds are less than 6 inches tall, and 2 to 3 pints when weeds are over 6 inches tall.

Precautions, Restrictions: Applications of 2,4-D or dicamba must be made at least 7 days prior to planting corn.

The tank mixes listed in this section are not registered in California.

Spot treatment
Use Instructions: For spot treatments, apply this product prior to silking of corn.

Precautions, Restrictions: Do not treat more than 10 percent of the total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside of target area for the same reason.

Hooded Sprayers
Use Instructions: This product may be used through hooded sprayers for weed control between the rows of corn (all), including field corn, sweet corn and popcorn. Only hooded sprayers that completely enclose the spray pattern may be used.

A hooded sprayer is a type of shielded applicator. The spray pattern is completely enclosed on the top and all 4 sides by a hood, thereby shielding the crop from the spray solution. This equipment must be set up and operated in a manner that avoids bouncing or raising the hoods off the ground in any way. If the hoods are raised, spray particles may escape and come into contact with the crop, causing damage or destruction of the crop. The spray hoods must be operated on the ground or skimming across the ground. Tractor speed must be adjusted to avoid bouncing of the spray hoods. Avoid operation on rough or sloping ground where the spray hoods might be raised off the ground.

When applying to corn that is grown on raised beds, ensure that the hood is designed to completely enclose the spray solution. If necessary, extend the front and rear flaps of the hoods to reach the ground in deep furrows.

Follow these requirements:
- The spray hoods must be operated on the ground or skimming across the ground.
- Do not apply more than 1 quart of this product per acre per application.
- Corn must be at least 12 inches tall, measured without extending leaves.
- Leave at least an 8 inch untreated strip over the drill row. For example, if the crop row width is 38 inches, the maximum width of the spray hood should be 30 inches.
- Maximum tractor speed: 5 mph
- Maximum wind speed: 10 mph
- Use low-drift nozzles.

Crop injury may occur when the foliage of treated weeds comes into direct contact with leaves of the crop. Do not apply this product when the leaves of the crop are growing in direct contact with weeds to be treated. Droplets, mist, foam or splatter of the herbicide solution may contact the crop and cause discoloration, stunting or destruction.

Precautions, Restrictions: Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator. Do not graze or feed corn forage or fodder following applications of this product through hooded sprayers. Do not apply more than 3 quarts of this product per acre per year for hooded sprayer applications.

Preharvest:
Use Instructions: Make applications at least 35 percent grain moisture or less. Ensure that maximum kernel fill is complete and the corn is physiologically mature (black layer formed). For ground applications, apply up to 3 quarts of this product per acre. For aerial applications, apply up to 1 quart of this product per acre.

Precautions, Restrictions: It is not recommended that corn grown for seed be treated because a reduction in germination or vigor may occur. Allow a minimum of 7 days between application and harvest.

Post-harvest
Use Instructions: This product may be applied after harvest of corn. Higher rates may be required for control of large weeds which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

Precautions, Restrictions: Do not harvest or feed treated vegetation for 8 weeks following application.

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COTTON
Types of Applications: Preplant, preemergence, at-planting, hooded sprayer selective equipment, spot treatment, preharvest

Preplant, Preemergence, and At-planting
Use Instructions: This product may be applied before, during or after planting cotton. Applications must be made prior to emergence of the crop.

Hooded sprayer, Selective Equipment
Use Instructions: This product may be applied through hooded sprayers, recirculating sprayers, shielded applicators or wiper application in cotton. Allow at least 7 days between application and harvest.

Precautions, Restrictions: See the "SELECTIVE EQUIPMENT' part of the "APPLICATION EQUIPMENT AND TECHNIQUES" section of this label for information on proper use and calibration of this equipment.

Spot treatment
Use Instructions: For spot treatments apply this product prior to boll opening of cotton.

Precautions, Restrictions: Do not treat more than 10 percent of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
Use Instructions: This product provides weed control and cotton regrowth inhibition when applied prior to harvest of cotton. For weed control, apply at rates given in the annual, perennial and woody brush tables. Apply 1 pint to 2 quarts of this product per acre for cotton regrowth inhibition. Allow a minimum of 7 days between application and harvest of cotton.

This product may be applied using either aerial or ground spray equipment. For ground applications, apply this product in 10 to 20 gallons of water per acre. For aerial applications, apply this product in 3 to 10 gallons of water per acre.

Apply after sufficient bolls have developed to produce the desired yield of cotton. Applications made prior to this time could affect maximum yield potential.

This product may be tank mixed with DEF® 6, Folex®, or Prep™ to provide additional enhancement of cotton leaf drop.

Precautions, Restrictions: Do not feed or graze treated cotton forage or hay following preharvest applications. DO NOT APPLY MORE THAN 1 QUART OF THIS PRODUCT PER ACRE BY AIR. Do not apply more than 2 quarts of this product per acre by ground. Do not apply to cotton growth for seed, as a reduction in germination or vigor may occur.

FALLOW SYSTEMS
Types of Applications: Chemical fallow, preplant fallow beds, aid-to-tillage.

Chemical fallow
Use Instructions: This product may be applied during the fallow period prior to planting or emergence of any crop listed on this label. For any crop not listed on this label, application must be made at least 30 days prior to planting. This product may be used as a substitute for tillage to control annual weeds in fallow fields. Also, broadcast or spot treatments will control or suppress many perennial weeds in fallow fields. Ground or aerial application equipment may be used. Tank mixtures with 2,4-D and dicamba may be used.

PRECAUTIONS, RESTRICTIONS: DO NOT APPLY BANVEL® OR 2,4-D TANK MIXTURES BY AIR IN CALIFORNIA.
Refer to the specific product labels for crop rotation restrictions and cautionary statements of all products used in tank mixtures. Some crop injury may occur if Banvel® is applied within 45 days of planting.

Preplant fallow beds
Use Instructions: This product may be applied to fallow beds prior to planting or emergence of any crop listed on this label. For any crop not listed on this label, applications must be made at least 30 days prior to planting. This product will control weeds listed in annual, perennial and woody brush tables.

In addition, 12 fluid ounces of this product plus 2 to 3 oz of Goal® 2XL per acre will control the following weeds with maximum height or length indicated: 3" – common cheeseweed, chickweed, groundsel; 6" – London rocket, sheperdspurse.

16 fluid ounces of this product plus 2 to 3 oz of Goal® 2XL per acre will control the following weeds with the maximum height or length indicated: 6" – common cheeseweed, groundsel, marestail (*Conyza canadensis*), 12" – chickweed, London rocket, sheperds-purse.

Aid-to-tillage
Use Instructions: This product may be used in conjunction with tillage practices in fallow systems or preplant to labeled crops to control downy brome, cheat, volunteer wheat, tansy mustard and foxtail. Apply 8 fluid ounces of this product in 3 to 10 gallons of water per acre. Make applications before weeds are 6 inches in height. Application must be followed by conventional tillage practices no later than 15 days after treatment and before regrowth occurs. Allow at least 1 day after application before tillage.

Precautions, Restrictions: Tank mixtures with residual herbicides may result in reduced performance.

GRAIN SORGHUM (MILO)
Types of Applications: Preplant, preemergence, at-planting, spot treatment, wiper applicators, preharvest and post-harvest

Preplant, Preemergence, At-planting
Use Instructions: This product may be applied before, during or after planting grain sorghum. Applications must be made prior to emergence of the crop.

Spot treatment and Wiper applications
Use Instructions: This product may be applied as a spot treatment in grain sorghum. Make spot treatments before heading of milo. This product may be applied with wiper applicators to control or suppress the weeds listed under "WIPER APPLICATORS" in the "SELECTIVE EQUIPMENT" section of this label.

Precautions, Restrictions: For spot treatment, do not treat more than 10 percent of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside of target area for the same reason.

For wiper applicators, allow at least 40 days between application and harvest. Do not use roller applicators. Do not feed or graze treated milo fodder. Do not ensile treated vegetation.

Preharvest
Use Instructions: Make applications at 30% grain moisture or less.

Precautions, Restrictions: Do not apply more than 2 quarts of this product per acre. Allow a minimum of 7 days between application and harvest of sorghum. It is not recommended that sorghum grown for seed be treated, as a reduction in germination or vigor may occur. The use of this product for preharvest grain sorghum (milo) is not registered in California.

Post-harvest
Use Instructions: This product may be applied after harvest of grain sorghum. Higher rates may be required for control of large weeds which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

This product may be applied to grain sorghum (milo) stubble following harvest to suppress or control regrowth. Apply 1 quart of this product per acre for control, or 1.5 pints of this product per acre for suppression.

Precautions, Restrictions: Do not harvest or feed treated vegetation for 8 weeks following application.

GRASS SEED PRODUCTION
Types of Applications: Preplant, renovation, site preparation, shielded sprayer

Preplant, renovation, site preparation
Use Instructions: Applications may be made prior to planting or renovation of turf or forage grass areas grown for seed production. For maximum control of existing vegetation, delay planting to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses, such as bermudagrass, summer or fall applications provide best control.

Precautions, Restrictions: Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after applications to allow proper translocation into underground plant parts.

Do not feed or graze treated areas for 8 weeks following application.

Shielded Sprayer (Idaho, Oregon, and Washington Only)
Use Instructions: When applied using shielded applicator equipment designed to prevent direct contact, movement of spray droplets, or mist onto desirable grasses grown for seed production, this product may be used to control labeled weeds. Use of low spray pressure through low pressure nozzles will minimize the potential of spray drift. Apply 1 to 3 quarts of this product as a broadcast spray in 10 to 20 gallons of total spray volume per acre. Uniform planting in straight rows aid in shielding sprayer applications. Best results are obtained when the grass seed crop is small enough to easily pass by or through the protective shields.

Precautions, Restrictions: Grower assumes all responsibility for crop losses from misapplication.

HERBS
Types of Herbs: Peppermint, spearmint
Use Instructions: This product may be used as a spot treatment in spearmint and peppermint. Apply spray-to-wet with hand-held equipment, such as backpack and knapsack sprayers, pump-up pressure sprayers, hand-guns, hand-wands or any other hand-held or motorized spray equipment used to direct the spray solution on to a limited area.

Precautions, Restrictions: Allow at least 7 days between application and harvest. Further applications may be made in the same area at 30-day intervals. No more than one-tenth of any acre should be treated at one time. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside the target area for this reason.

PASTURES
Types of Pastures: Bahiagrass, bermudagrass, bluegrass, brome, fescue, orchardgrass, ryegrass, timothy, wheatgrass, alfalfa and clover. In Hawaii, pastures include kikuyu grass, pangola grass, and guineagrass.

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Types of Applications: Spot treatment, wiper applications, preplant, preemergence, pasture renovation.

Spot treatment and Wiper Application
Use Instructions: This product may be applied as a spot treatment or with wiper applicators in pastures. Applications may be made in the same area at 30-day intervals.

Precautions, Restrictions: For spot treatment and wiper applications, apply in areas where the movement of domestic livestock can be controlled. No more than one-tenth of any acre should be treated at one time. Remove domestic livestock before application and wait 14 days after application before grazing livestock or harvesting.

Preplant, Preemergence and Pasture renovation
Use Instructions: This product may be applied prior to planting or emergence of forage grasses and legumes. In addition, this product may be used to control perennial pasture species listed on this label prior to re-planting.

Precautions, Restrictions: Remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

PEANUTS
Types of Applications: Preplant, preemergence, at-planting

Use Instructions: This product may be applied before, during or after planting peanuts. Applications must be made prior to the emergence of the crop.

SMALL FRUITS AND BERRIES
Labeled Crops: Blackberry, Blueberry, Boysenberry, Cranberry, Currant, Dewberry, Elderberry, Gooseberry, Huckleberry, Loganberry, Olallieberry, Raspberry (Black, Red), Youngberry

Types of Applications: Preplant, preemergence, directed spray (except cranberry), wiper application

Use Instructions: This product may be applied as a preplant or preemergence broadcast application or as a wiper application for crops listed in this section. Directed sprays may be applied to any crop except cranberries. For wick or wiper applicators, mix 1 gallon of this product in 4 gallons of water to prepare a 20 percent solution. In severe infestations, reduce equipment ground speed to ensure that adequate amounts of this product are wiped on the weeds. A second treatment in the opposite direction may be beneficial.

Precautions, Restrictions: Do not permit herbicide solution to contact desirable vegetation, including green shoots, canes or foliage. Allow a minimum of 30 days between last application and harvest of cranberries. For other small fruits and berries, allow a minimum of 14 days between last application and harvest.

SOYBEANS
Types of Applications: Preplant, preemergence, at-planting, spot treatment, preharvest, selective equipment, hooded sprayers

Preplant, Preemergence and At-planting
Use Instructions: This product may be applied before, during or after planting soybeans. Applications must be made prior to the emergence of the crop.

The following tank mixtures may be applied before, during or after planting in conventional tillage systems, into a cover crop, established sod or in previous crop residue.

CANOPY®	LINEX®	PURSUIT® PLUS
COMMAND®	LOROX®/LINURON	SCEPTER®
DUAL MAGNUM	METRIBUZIN 75	SQUADRON®
FUSION®	MICRO-TECH®	STEALTH®
INTRRO®/ALACHLOR	PURSUIT®	

For improved burndown, this product may be tank-mixed with 2,4-D or 2,4-DB. See the 2,4-D label for intervals between application and planting.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

Annual weeds: For difficult-to-control weeds such as fall panicum, barnyardgrass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall, and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1 to 1.5 pints of this product per acre when weeds are less than 6 inches tall, and 2 to 3 pints when weeds are over 6 inches tall.

Precautions, Restrictions: The tank mix recommendations in this section are not registered in California.

Spot treatment
Use Instructions: For spot treatments, apply this product prior to initial pod set in soybeans.

Precautions, Restrictions: Do not treat more than 10 percent of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
Use Instructions: This product provides weed control when applied prior to harvest of soybeans.

Apply at rates given in the annual, perennial and woody brush tables. This product may be applied using either aerial or spray equipment. For ground applications, apply this product in 10 to 20 gallons of water per acre. For aerial applications, apply this product in 3 to 10 gallons of water per acre.

Apply after pods have set and lost all green color. Allow a minimum of 7 days between application and harvest of soybeans. Care should be taken to avoid excessive seed shatter loss due to ground application equipment.

Precautions, Restrictions: Do not graze or harvest treated crop for livestock feed within 25 days of last preharvest application. DO NOT APPLY MORE THAN 6 QUARTS PER ACRE OF THIS PRODUCT FOR PREHARVEST APPLICATIONS. DO NOT APPLY MORE THAN 1 QUART PER ACRE OF THIS PRODUCT BY AIR. Do not apply to soybeans grown for seed as a reduction in germination or vigor may occur.

Selective equipment
Use Instructions: This product may be applied through recirculating sprayers, shielded applicators, hooded sprayers, wiper applicators or sponge bars in soybeans. Allow at least 7 days between application and harvest.

Precautions, Restrictions: See the "SELECTIVE EQUIPMENT" part of the "APPLICATION EQUIPMENT AND TECHNIQUES" section of this label for information on proper use and calibration of this equipment.

SUGARCANE
Types of Applications: Preplant, preemergence, spot treatment, fallow, hooded sprayers

Preplant, Preemergence
Use Instructions: This product may be applied in or around sugarcane fields or in fields prior to the emergence of plant cane.

Precautions, Restrictions: Do not apply to vegetation in or around ditches, canals or ponds containing water to be used for irrigation.

Spot Treatment
Use Instructions: This product may be applied as a spot treatment in sugarcane. For control of volunteer or diseased sugarcane, make a 1 percent solution of this product in water and spray to wet the foliage of vegetation to be controlled. Volunteer or diseased sugarcane should have at least 7 new leaves.

Precautions, Restrictions: Avoid spray contact with healthy cane plants since severe damage or destruction may result. Do not feed or graze treated sugarcane foliage following application.

FALLOW TREATMENTS
Use Instructions: This product may be used as a replacement for tillage in fields that are lying fallow between sugarcane crops. This product may also be used to remove the last stubble of ratoon cane. For removal of last stubble of ratoon cane, apply 4 to 5 quarts of this product in 10 to 40 gallons of water per acre to new growth having at least 7 new leaves. Allow 7 or more days after application before tillage.

Hooded sprayers
Use Instructions: This product may be used through hooded sprayers for weed control between the rows of sugarcane. A hooded sprayer is a type of shielded applicator. The spray pattern is completely enclosed on the top and all 4 sides by a hood, thereby shielding the crop from the spray solution.

Minimize the potential for spray particles to escape from under the hood by operating the sprayer at appropriate ground speeds, nozzle pressures and wind speeds. Operation on rough or sloping ground may result in spray particles escaping from the hood.

When applying to sugarcane that is grown on raised beds, ensure that the hood is designed to completely enclose the spray. If necessary, extend the front and rear flaps of the hoods to reach the ground in furrows between the rows.

Equipment must be designed, maintained, and operated to prevent the herbicide solution from contacting the crop. Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator.

Precautions, Restrictions: Do not allow treated weeds to come into contact with the crop. Droplets, mist, foam or splatter of the herbicide solution settling on the crop may result in discoloration, stunting or destruction.

SUNFLOWERS
Types of Applications: Preplant, preemergence

Use Instructions: This product may be applied before, during or after planting sunflowers. Applications must be made prior to emergence of the crop.

Precautions, Restrictions: Do not apply more than 1 quart of this product per acre for sunflowers. Make only one preplant or preemergent application per year. Do not feed or graze sunflower forage following application of this product.

The use of this product for sunflowers is not registered in California.

TREE, NUT AND VINE (GENERAL)
Types of Applications: General weed control, middles (between rows of trees), strips (in row of trees), selective equipment (except kiwi), perennial grass suppression.

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NOTE: THIS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL CITRUS CROPS, TREE FRUITS, TREE NUTS AND VINE CROPS. SEE THE INDIVIDUAL CROP SECTIONS FOR INSTRUCTIONS, PREHARVEST INTERVALS, PRECAUTIONS AND RESTRICTIONS FOR SPECIFIC CROPS.

This product may be applied in middles, strips and for general weed control in established citrus groves, tree fruit and tree nut orchards, and vineyards. Apply at 1 pint to 5 quarts per acre. Repeat applications may be made up to a maximum of 10.6 quarts per acre per year. This product may also be used for site preparation prior to transplanting these crops. Allow a minimum of 3 days between application and transplanting. Applications may be made with boom equipment, CDA, shielded sprayers, hand-held and high-volume wands, lances, orchard guns or with wiper applicator equipment, except as directed.

Middles (between rows)
Use Instructions: This product will control or suppress annual and perennial weeds and ground covers growing between rows of labeled tree and vine crops. If weeds are under drought stress, irrigate prior to application. Reduced control may result if weeds have been mowed prior to application.

A tank mixture of this product plus Goal® 2XL may be used for annual weeds in middles between rows of citrus crops, tree fruits, tree nuts and vine crops. This mixture is recommended when weeds are stressed or growing in dense populations. 16 to 32 oz/A of this product plus 3 to 12 oz/A of Goal® 2XL will control annual weeds with a maximum height or diameter of 6 inches, including crabgrass, hairy fleabane (*Conyza bonariensis*), common groundsel, junglerice, common lambsquarters, redroot pigweed, London rocket, common ryegrass, sheperdspurse, annual sowthistle, common cheeseweed (malva), filaree (suppression), horseweed/marestail (*Conyza canadensis*), stinging nettle and common purslane (suppression). 12 to 32 oz/A of this product plus 3 to 12 oz/A of Goal® 2XL will control common cheeseweed (Malva) with a maximum height or diameter of 3 inches.

Strips (in rows)
Use Instructions: This product may be applied in rows of tree or vine crops and may also be tank mixed with the following products.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

DEVRINOL® 50 DF	SIMAZINE 4L
DIREX® 4L	SIMAZINE 90DF
GOAL® 2XL	SIM-TROL™ 4L
KARMEX® DF	SOLICAM® DF
KROVAR® I	SULFLAN® AS
PRINCEP® CALIBER 90®	SURFLAN® DRY FLOWABLE
STEALTH®	

Do not apply these tank mixtures in Puerto Rico.

Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Apply 1 pint to 5 quarts of this product per acre in these tank mixtures. Use rates at the higher end of the specified rate range when weeds are stressed, growing in dense populations or are greater than 12 inches tall.

Perennial grass suppression
This product will suppress perennial grasses such as bahiagrass, bermudagrass, tall fescue, orchardgrass, Kentucky bluegrass and quackgrass that are grown as ground covers in trees and vine crops.

For suppression of tall fescue, fine fescue, orchard and quackgrass, apply 8 fluid ounces of this product in 10 to 20 gallons of water per acre.
For suppression of Kentucky bluegrass covers, apply 6 fluid ounces of this product per acre. Do not add ammonium sulfate.

For best results, mow cool season grass covers in the spring to even their height and apply this product 3 to 4 days after mowing.

For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 6 fluid ounces of this product in 10 to 25 gallons of water per acre. Apply 1 to 2 weeks after full green-up after mowing to a uniform height of 3 to 4 inches. The application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 4 fluid ounces of this product per acre, followed by an application of 2 to 4 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

For burndown of bermudagrass, apply 1 to 2 quarts of this product in 3 to 20 gallons of water per acre. Use this treatment only if reduction of the bermudagrass stand can be tolerated. When burndown is required prior to harvest, allow at least 21 days to ensure sufficient time for burndown to occur.

For suppression of bermudagrass, apply 6 to 16 fluid ounces of this product per acre east of the Rocky Mountains and 16 fluid ounces of this product per acre west of the Rocky Mountains. Apply in a total spray volume of 3 to 20 gallons per acre, no sooner than 1 to 2 weeks after full green-up. If the bermudagrass is mowed prior to application, maintain a minimum of 3 inches in height. Sequential applications may be made when regrowth occurs and bermudagrass injury and stand reduction can be tolerated. East of the Rocky Mountains, rates of 6 to 10 fluid ounces per acre should be used in shaded conditions or where a lesser degree of suppression is desired.

Selective equipment
Shielded and wiper applicators may be used in tree crops and grapes. Refer to the individual crop sections for time interval between application and harvest.

GENERAL PRECAUTIONS/RESTRICTIONS: For all uses in this section.

EXTREME CARE MUST BE EXERCISED TO AVOID CONTACT OF HERBICIDE SOLUTION, SPRAY, DRIFT OR MIST WITH FOLIAGE OR GREEN BARK OF TRUNK, BRANCHES, SUCKERS, FRUIT OR OTHER PARTS OF TREES AND VINES. CONTACT OF THIS PRODUCT WITH OTHER THAN MATURED BROWN BARK CAN RESULT IN SERIOUS CROP DAMAGE.

AVOID PAINTING CUT STUMPS WITH THIS PRODUCT AS INJURY RESULTING FROM ROOT GRAFTING MAY OCCUR IN ADJACENT TREES.

TREE FRUITS
Labeled Crops: Apple, Apricot, Cherry (Sweet, Sour), Crabapple, Loquat, Mayhaw, Nectarine, Olive, Peach, Pear, Plum/Prune (All), Quince

Types of Applications: General weed control, middles (between rows of trees), strips (in row of trees), selective equipment.

NOTE: FOR GENERAL USE DIRECTIONS, SEE THE "TREE, NUT AND VINE (GENERAL)" SECTION. THE FOLLOWING DIRECTIONS ARE SPECIFIC TO TREE FRUITS.

Restrictions on application equipment
For cherries, any application equipment listed in this section may be used in all states.

For citron and olives, apply as post-directed spray only.

Any application equipment listed in this section may be used in apricots, nectarines, peaches and plums/prunes growing in Arizona, California, Colorado, Idaho, Kansas, Kentucky, New Jersey, North Dakota, Oklahoma, Oregon, Texas, Utah and Washington, except for peaches grown in the states specified in the following paragraph. In all other states use wiper equipment only.

For PEACHES grown in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee only, apply with a shielded boom sprayer or shielded wiper applicator, which prevents any contact of this product with the foliage or bark of trees. Apply no less than 90 days after first bloom. Applications made after this time may result in severe damage. Remove suckers and low-hanging limbs at least 10 days prior to application. Avoid applications near trees with recent pruning wounds or other mechanical injury. Apply only near trees which have been planted in the orchard for 2 or more years. EXTREME CARE MUST BE TAKEN TO ENSURE NO PART OF THE PEACH TREE IS CONTACTED.

Precautions, Restrictions: Allow a minimum of 1 day between last application and harvest for apple, crabapple, loquat, mayhaw, pear, quince.

Allow a minimum of 17 days between last application and harvest for apricot, cherry, nectarine, olive, peach, plum/prune.

TREE NUTS
Labeled Crops: Almond, Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert (Hazelnut), Hickory nut, Macadamia, Pecan, Pistachio, Walnut (Black, English)

Types of Applications: General weed control, middles (between rows of trees), strips (in row of trees), selective equipment.

NOTE: FOR GENERAL USE DIRECTIONS, SEE THE "TREE, NUT AND VINE (GENERAL)" SECTION. THE FOLLOWING DIRECTIONS ARE SPECIFIC TO TREE NUTS.

Precautions, Restrictions: Allow a minimum of 3 days between last application and harvest of tree nuts.

TROPICAL CROPS
Labeled Crops: Atemoya, Avocado, Banana, Barbados Cherry (acerola), Breadfruit, Canistel, Carambola, Cherimoya, Cocoa beans, Coconuts, Coffee, Dates, Figs, Guava, Jaboticaba, Jackfruit, Longan, Lychee, Mango, Marmaladebox (genip), Papaya, Passion fruit, Persimmon, Pineapple, Plantain, Pomegranate, Sapodilla, Sapote (black, mamey, white), Soursop, Sugar apple, Tamarind, Tea.

Use Instructions: This product may be applied for general weed control or for site preparation prior to transplanting crops listed in this section. In coffee and banana, delay applications 3 months after transplanting to allow the new coffee or banana plant to become established.

Precautions, Restrictions: Allow a minimum of 14 days between last application and harvest of acerola, atemoya, avocado, breadfruit, canistel, carambola, cherimoya, cocoa beans, coconuts, dates, figs, genip, jaboticaba, jackfruit, longan, lychee, mango, mayhaw, passion fruit, persimmon, pomegranate, sapodilla, sapote, soursop, sugar apple, tamarind, and tea.
Allow a minimum of 28 days between last application and harvest of plantain and coffee.

Allow a minimum of 1 day between last application and harvest of banana, guava, and papaya.

For direct application to bananas (bananacide), remove fruit prior to treatment.

Do not feed or graze treated pineapple forage following application.

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VEGETABLE CROPS

Labeled Crops: Amaranth, Arrugula, Artichoke (Jerusalem), Beans (All), Beet greens, Garden beets, Broccoli (All), Cabbage (Chinese), Cantaloupe, Cardoon, Cavalo Broccolo, Carrot, Cauliflower, Casaba melon, Celery, Celery (Chinese), Celeriac, Celtuce, Chard (Swiss), Chayote, Chervil, Chick peas, Chicory, Chrysanthemum, Collards, Corn salad, Crenshaw melon, Cress, Cucumber, Dandelion, Dock (sorrel), Eggplant, Endive, Fennel (Florence), Garlic, Gherkin, Ginseng, Gourds, Ground cherry, Guar, Honeydew melon, Honey ball melon, Horseradish, Kale, Kohlrabi, Leek, Lentils, Lettuce, Mango melon, Melons (All), Mizuna, Muskmelon, Mustard greens, Okra, Onion, Oriental radish, Parsley, Parsnips, Peas (All), Pepinos, Pepper (All), Persian Melon, Potato (Irish), Pumpkin, Purslane, Radish, Rape greens, Rhubarb, Rutabaga, Salsify, Shallot, Spinach, Squash (Summer, Winter), Sugar beets, Sweet potato, Tomatillo, Tomato, Turnip, Watercress, Watermelon, Yams.

Use Instructions: This product may be applied prior to the emergence of direct seeded vegetables or prior to transplanting vegetables.

Precautions, Restrictions: When applying this product prior to transplanting crops into plastic mulch, care must be taken to remove residues of this product from the plastic prior to transplanting. Residues can be removed by 0.5 inch natural rainfall or by applying water via sprinkler system.

For the following crops only, apply prior to planting. Allow at least 3 days between application and planting of cantaloupe, casaba melon, crenshaw melon, cucumber, eggplant, garlic, gherkin, gourds, ground cherry, honeydew melon, honey ball melon, mango melon, melons (all), muskmelon, pepper (all), persian melon, pumpkin, squash (summer, winter), tomatillo, tomato, watercress, and watermelon.

Nonbearing Ginseng: This product may be used for general weed control in established nonbearing ginseng. Direct applications so that there is no contact of this product with the ginseng plant. Applications may be made with boom equipment, CDA, shielded sprayers, hand-held and high volume wands, lances, orchard guns or with wiper application equipment. Applications must be made at least one year prior to harvest. Extreme care must be exercised to avoid contact of herbicide solution, spray, drift or mist with foliage or green bark of trunk, branches, suckers, fruit or other parts of desirable plants. Contact of this product with other than matured brown bark can result in serious crop damage.

Wiper applicators may be used in rutabagas. Allow at least 14 days between application and harvest.

VINE CROPS

Labeled Crops: Grapes (raisin, table, wine), Kiwi fruit

Types of Applications: General weed control, middles (between rows), strips (in row), selective equipment.

NOTE: FOR GENERAL USE DIRECTIONS, SEE THE "TREE, NUT AND VINE (GENERAL)" SECTION. THE FOLLOWING DIRECTIONS ARE SPECIFIC TO VINE CROPS.

Applications should not be made when green shoots, canes or foliage are in the spray zone.

In the northeast and Great Lakes regions, applications must be made prior to the end of bloom stage of grapes to avoid injury, or make application with shielded sprayers or wiper equipment.

Precautions, Restrictions: Allow a minimum of 14 days between last application and harvest.

ROUNDUP READY® CROPS

NOTE: USE OF THIS PRODUCT OVER "ROUNDUP READY" OR OTHER GLYPHOSATE TOLERANT CROPS MAY SUBJECT YOU TO THE RISK OF LOSS OF LICENSE RIGHTS TO PATENTED GLYPHOSATE TOLERANCE TECHNOLOGIES AND/OR LEGAL ACTION FOR INFRINGEMENT OF PATENTS TO THOSE GLYPHOSATE-TOLERANT TECHNOLOGIES. IF YOU ARE A LICENSED GROWER UNDER AN AGREEMENT WITH A GLYPHOSATE-TOLERANT SEED MANUFACTURER, PLEASE REFER TO YOUR LICENSE AGREEMENT TO DETERMINE WHETHER YOU MAY USE THIS PRODUCT WITHOUT RISK OF LOSING YOUR LICENSE OR OF LEGAL ACTION AGAINST YOU.

ALFALFA WITH THE ROUNDUP READY® GENE
LOVELAND PRODUCTS, INC. RECOMMENDS USE OF THIS PRODUCT FOR POSTEMERGENCE APPLICATION ONLY ON ALFALFA VARIETIES DESIGNATED AS CONTAINING A ROUNDUP READY GENE.

The Roundup Ready designation indicates that the alfalfa contains a patented gene that provides tolerance to this product. Information on Roundup Ready alfalfa varieties may be obtained from your seed supplier or Loveland representative. Roundup Ready crop varieties must be purchased from an authorized licensed seed supplier.

See the "ROUNDUP READY CROPS" section of this label booklet for general precautionary instructions for use in Roundup Ready crops. Do NOT combine the instructions in this section of the label with other recommendations made for alfalfa varieties that do not contain a Roundup Ready gene listed in the "ALFALFA, CLOVER, AND OTHER FORAGE LEGUMES" and "PASTURES" sections of this label booklet.

FOR WEED CONTROL APPLICATIONS IN SEED PRODUCTION OF ROUNDUP READY® ALFALFA

Application Instructions
This product will control many troublesome emerged weeds with over-the-top applications in Roundup Ready alfalfa grown for seed. In-crop applications may be made from emergence through the late vegetative stage and spot treatments may be made from early bud stage through seed harvest.

For ground applications with broadcast equipment, apply this product in 3 to 40 gallons of spray solution per acre. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

For aerial application:
Use the specified rates of this product in 3 to 15 gallons of spray solution per acre.

DO NOT EXCEED 64 FLUID OUNCES OR 2 QUARTS OF THIS PRODUCT PER ACRE WHEN MAKING APPLICATIONS BY AIR. AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHICH DO NOT CONTAIN A ROUNDUP READY GENE. Do not apply during low-level inversion conditions, when winds are gusty or under any other conditions that favor drift. Drift may cause damage to any vegetation contacted to which treatment is not intended. To prevent injury to adjacent desirable vegetation, appropriate buffer zones must be maintained.

See the "APPLICATION EQUIPMENT AND TECHNIQUES" section of the label booklet for procedures. To avoid spray drift that may cause injury to any vegetation not intended for treatment.

Sprayer Preparation: it is important that sprayer and mixing equipment be clean and free of pesticide residue before making applications of this product to Roundup Ready alfalfa. Follow the cleaning procedures specified on the label of the product(s) used. Alfalfa can be very sensitive to many herbicides at extremely low concentrations and care should be taken to thoroughly clean all equipment prior to use.

Types Of Applications: Preplant, At-planting, Preemergence, Postemergence and Post-harvest of seed

Maximum Allowable Combined Application Rates

Combined total per year for all applications: 8.0 quarts per acre.

Preplant, At-planting and Preemergence applications: 64 fl oz or 2 quarts per acre.

Total in-crop application rate from emergence through the late vegetative stage: 6.0 quarts per acre.

Spot-treatment during early bud stage through seed harvest (See the "Spot Treatment and Wiper Application" section and the "PRECAUTIONS, RESTRICTIONS" under the "ALFALFA, CLOVER, AND OTHER FORAGE LEGUMES" and "PASTURES" sections of this label for complete instructions) : Apply spray-to- wet; do not apply to the point of runoff.

There are no rotational crop restrictions following applications of this product. For any crop NOT listed in the label booklet, applications must be at least 30 days prior to planting.

Over-the-top applications: Broadcast applications of this product may be made using ground or aerial equipment in-crop to Roundup Ready alfalfa from emergence through the late vegetative stage. Do not make broadcast applications of this product between the initiation of alfalfa budding and the harvest of seed. Any single over-the-top broadcast application of this product should not exceed 64 fluid ounces or 2 quarts per acre. Sequential applications of this product should be at least 7 days apart.

Due to the biology and breeding constraints of alfalfa, up to 10% of the seedlings may not contain a Roundup Ready gene and will not survive or thrive after the first application oft his product. To limit undesirable effects of stand gaps created by the loss of plants not containing a Roundup Ready gene, a single application of at least 32 fluid ounces or 1 quart per acre oft his product should be applied at or before the 3 to 4 trifoliate growth stage.

Spot Treatment after late vegetative stage: For late emerging weeds, this product may be applied as a spot treatment in Roundup Ready alfalfa grown for seed during the early bud stage through seed harvest. Applications made during this stage may result in reduced seed yield and quality and are the responsibility of the grower. Make applications on a spray-to-wet basis. Do not spray to the point of runoff. If a spot treatment is made after the late vegetative stage, harvested seed must not be used for alfalfa sprout production.

Post-harvest applications: Following harvest of Roundup Ready alfalfa seed, the stand may be managed for forage and hay production.

Weeds controlled: For specific rates of application and instructions for control of various annual and perennial weeds, refer to the "ANNUAL WEEDS RATE TABLE" and the "PERENNIAL WEEDS RATE TABLE" in this label booklet. Some weeds with multiple germination times or suppressed (stunted) weeds may require a second application of this product for complete control. The second application should be made after some regrowth of weeds has occurred.

In addition to those weeds listed in the label booklet, this product will suppress or control the parasitic weed, Dodder (*Cuscuta* spp.) in Roundup Ready alfalfa seed production. Repeat applications may be necessary for complete control.

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Tank mixtures with other herbicides, insecticides, or fungicides may result in crop injury or reduced weed control and are NOT recommended for over-the-top applications of this product.

PRECAUTIONS AND RESTRICTIONS: Do not make over-the-top broadcast applications of this product between the initiation of alfalfa budding and the harvest of Roundup Ready alfalfa seed. If a spot treatment of this product is made after the late vegetative stage, do not use harvested Roundup Ready alfalfa seed for alfalfa sprout production. Regardless of applications made, the use of harvested Roundup Ready alfalfa seed is not suitable, and is not recommended for production of alfalfa sprouts.

FOR WEED CONTROL APPLICATIONS IN FORAGE AND HAY PRODUCTION OF ROUNDUP READY ALFALFA

Application Instructions: This product will control many troublesome emerged weeds with over-the-top applications in Roundup Ready alfalfa. Allow a minimum of 5 days between the last application and grazing, or, cutting and feeding of alfalfa forage and hay.

For ground applications with broadcast equipment, apply this product in 3 to 40 gallons of spray solution per acre. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

For aerial application: Use the specified rates of this product in 3 to 15 gallons of spray solution per acre.

DO NOT EXCEED 64 FLUID OUNCES OR 2 QUARTS OF THIS PRODUCT PER ACRE WHEN MAKING APPLICATIONS BY AIR. FOR AERIAL APPLICATION IN CALIFORNIA, REFER TO THE FEDERAL SUPPLEMENTAL LABEL FOR AERIAL APPLICATION IN THAT STATE. AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHICH DO NOT CONTAIN A ROUNDUP READY GENE. Do not apply during low-level inversion conditions, when winds are gusty or under any other conditions that favor drift. Drift may cause damage to any vegetation contacted to which treatment is not intended. To prevent injury to adjacent desirable vegetation, appropriate buffer zones must be maintained.
See the "APPLICATION EQUIPMENT AND TECHNIQUES" section of the label booklet for procedures to avoid spray drift that may cause injury to any vegetation not intended for treatment.

Sprayer Preparation: It is important that sprayer and mixing equipment be clean and free of pesticide residue before making applications of this product to Roundup Ready alfalfa. Follow the cleaning procedures specified on the label of the product(s) used. Alfalfa can be very sensitive to many herbicides at extremely low concentrations and care should be taken to thoroughly clean all equipment prior to use.

Types of applications: Preplant, At-planting, Preemergence and Postemergence

MAXIMUM ALLOWABLE APPLICATION RATES

Combined total per year for all applications, including preplant during year of establishment: 8.0 quarts per acre

Combined total per year for in-crop applications for newly established and established stands: 6.0 quarts per acre (192 fl oz per acre)

Preplant, At-planting and Preemergence single applications: 2 quarts per acre (64 fl oz per acre)

New Stand Establishment (seeding year)

Prior to First Cutting During New Stand Establishment:

From emergence up to 4 trifoliate leaves: 64 fl oz or 2 quarts per acre

From 5 trifoliate leaves up to 5 days before first cutting: 64 fl oz or 2 quarts per acre

After First Cutting in Newly Established Stands:
In-crop application, per cutting, up to 5 days before cutting: 64 fl oz or 2 quarts per acre

Established Stands (non-seeding year)

In-crop applications, per cutting up to 5 days before cutting: 64 fl oz or 2 quarts per acre

There are no rotational crop restrictions following applications of this product. For any crop NOT listed in the label booklet, applications must be made at least 30 days prior to planting.

Over-the-top applications: This product may be applied postemergence to Roundup Ready alfalfa from emergence until 5 days prior to cutting. Any single over-the-top application of this product should not exceed 64 fluid ounces per acre. Sequential applications of this production should be at least 7 days apart.

Attention: Where Roundup Ready alfalfa is grown with a companion or cover crop, or is over seeded with a second species, over-the-top applications of this product will eliminate the non-Roundup Ready species.

During stand establishment, due to the biology and breeding constraints of alfalfa, up to 10% of the seedlings may not contain the Roundup Ready gene and will not survive after the first application of this product. To eliminate the undesirable effects of stand gaps created by the loss of plants not containing a Roundup Ready gene, a single application of at least 32 fluid ounces or 1 quart per acre of this product should be applied at or before the 3 to 4 trifoliate growth stage.

In both newly seeded and established stands, in order to maximize yield and quality potential of forage and hay, applications of this product should be made after weeds have emerged but before alfalfa growth or re-growth interferes with application spray coverage of the target weeds.

Weeds controlled: For specific rates of application and instructions for control of various annual and perennial weeds, refer to the "ANNUAL WEEDS RATE TABLE" and the "PERENNIAL WEEDS RATE TABLE" in this label booklet. Some weeds with multiple germination times or suppressed (stunted) weeds may require a second application of this product for complete control. The second application should be made after some regrowth of weeds has occurred.

In addition to those weeds listed in this label booklet, this product will suppress or control the parasitic weed, Dodder (Cuscuta spp.) in Roundup Ready alfalfa. Repeat applications may be necessary for complete control.

Tank mixtures with other herbicides, insecticides, or fungicides may result in crop injury or reduced weed control and are NOT recommended for over-the-top applications of this product.

PRECAUTIONS AND RESTRICTIONS: Any single over-the-top application of this product should not exceed 64 fluid ounces or 2 quarts per acre. Sequential applications of this production should be at least 7 days apart. The combined total per year for all in-crop applications in newly established and established stands must not exceed 6.0 quarts (192 fluid ounces) per acre. Remove domestic livestock before application and wait a minimum of 5 days after last application before grazing, or cutting and feeding of Roundup Ready alfalfa forage and hay.

Soybeans with the Roundup Ready® Gene
LOVELAND PRODUCTS, INC. RECOMMENDS USE OF THIS PRODUCT FOR POSTEMERGENCE APPLICATION ONLY ON SOYBEAN VARIETIES DESIGNATED AS CONTAINING THE ROUNDUP READY® GENE.

- Applying this product to soybean varieties which are not designated as Roundup Ready® will result in severe crop injury and yield loss. Avoid contact with foliage, green stems, or fruit of crops, or any desirable plants which do not contain the Roundup Ready® gene, since severe injury or destruction will result.
- Roundup Ready® varieties must be purchased from an authorized seed supplier. Crop safety and weed control performance are not warranted by Loveland Products, Inc. when this product is used in conjunction with "brown bag" or "bin run" soybean seed saved from previous year's production and replanted.
- The Roundup Ready® designation indicates that the soybean contains a patented gene which provides tolerance to Loveland Products, Inc.'s Glyphosate brand herbicides. Information on Roundup Ready® soybeans may be obtained by your seed supplier.

NOTE: The use of this product for in-crop applications over Roundup Ready® soybean is not registered in California.

Application Instructions
This product may be applied postemergence to Roundup Ready® soybeans from the cracking stage throughout flowering.
Allow a minimum of 14 days between applications and harvest of soybeans.

Maximum Allowable Yearly Rates
Preplant: Maximum amount of this product which can be applied prior to crop emergence is 5 quarts/A.

In-crop: Maximum combined total of multiple in-crop applications from cracking throughout flowering is 3 quarts/A. The maximum rate for any single in-crop application is 2 quarts/A. The maximum combined total of this product which can be applied during flowering is 2 quarts/A.

Preharvest: Maximum amount of this product that can be applied after loss of green color in soybean pods until 14 days before harvest is 1 quart/A. The combined total of in-crop and preharvest Makaze applications may not exceed 3 quarts/A.

Cropping Season: Combined total per year for all applications may not exceed 8 quarts/A.

When applied as directed, this product will control labeled annual grasses and broadleaf weeds in Roundup Ready® soybeans. Many perennial grasses and broadleaf weeds will be controlled or suppressed with one or more applications of this product.
There are no rotational crop restrictions following application of this product.

For ground applications: Use the specified rates of this product in 3 to 15 gallons of spray solution per acre as a broadcast spray. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment, use nozzles which provide a flat fan pattern. Check for even distribution of spray droplets.

For aerial applications: Use the specified rates of this product in 3 to 15 gallons of spray solution per acre. Do not exceed 1 quart of this product per acre. DO NOT APPLY DURING LOW LEVEL INVERSION CONDITIONS, WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITIONS WHICH FAVOR DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. MAINTAIN APPROPRIATE BUFFER ZONES TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION.

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AERIAL APPLICATIONS ON ROUNDUP READY® SOYBEANS MAY BE MADE ONLY IN THE FOLLOWING STATES: ALABAMA, ARKANSAS, FLORIDA, GEORGIA, KANSAS, LOUISIANA, MISSISSIPPI, MISSOURI (BOOT-HEEL) ONLY, NORTH CAROLINA, OKLAHOMA, SOUTH CAROLINA, TENNESSEE AND TEXAS.

Annual Weed Rate Tables
The following rates will provide control of labeled grasses and broadleaf weeds in conventional and no-till soybean production systems. Refer to the "ANNUAL WEEDS RATE TABLES ALPHABETICALLY BY SPECIES" on this label for application rates for specific annual weeds.

Loveland Products, Inc. will not warrant crop safety or weed control when Roundup Ready® soybeans are treated with herbicides not specified on this label. Because of the potential for: 1) crop injury, 2) poor weed control from antagonism, and/or 3) rotational crop restrictions, herbicides not specified on this label should not be used, whether applied preemergence or applied postemergence as a tank mixture with Makaze.

This product may be used up to 64 fluid ounces per acre in any single application for control of annual weeds, where heavy weed densities exist. The maximum combined total of this product which can be applied during flowering is 64 fluid ounces per acre.

NOTE: The following instructions are based on a clean start at planting by using a burn-down application or tillage to control existing weeds before crop emergence. In no-till and stale seedbed systems, a preplant burn-down treatment of 16-64 fluid ounces per acre of this product can be used to control existing weeds prior to crop emergence.

Midwest/Mid-Atlantic
Narrow row or drilled soybeans: A single in-crop application of this product will provide effective control of labeled weeds. For best results, an initial application of 32 fluid ounces per acre (fl oz/A) on 4-8" weeds is specified. Weeds will generally be 4-8" tall to 3-5 weeks after planting. If the initial application is delayed and weeds are 8-18" tall, use 48 fl oz/A for best results.

Under adverse growing conditions such as drought, hail, wind damage or a poor soybean stand that slows or delays canopy closure, a sequential application of this product at 16-32 fluid ounces per acre may be necessary to control late flushes of weeds. The combined total application in-crop must not exceed 64 fluid ounces per acre.

Wide row soybeans: An in-crop application of this product will provide effective control of the initial stand of labeled weeds. For best results, an initial application of 32 fluid ounces per acre (fl oz/A) on 4-8" weeds is specified. Weeds will generally be 4-8" tall 3 to 5 weeks after planting. If new flushes of weeds occur, they can be controlled by sequential applications of this product.

Initial Treatment

Weed Height (inches)	Rate (fluid oz/A)
8	32
18	48

Sequential Application (if needed)*

Weed Height (inches)	Rate (fluid oz/A)
1-3	16
3-6	24
6-12	32

*Combined total application in-crop not to exceed 96 fluid ounces per acre.

Giant ragweed: Apply 32 fluid oz/A when the weed is 8-12" tall to avoid the need for sequential application.

Groundcherry, ladysthumb, Pennsylvania smartweed and morningglory: Apply 32 fl oz/A to weeds 3-6" tall.

Some weeds, such as black nightshade, wooly cupgrass, shattercane, wild proso millet, burcucumber, and giant ragweed, with multiple germination times may require a sequential application of this product. Suppressed or stunted weeds may also require sequential applications. Sequential applications should be made after some regrowth has occurred. Use a minimum of 16 fluid ounces of this product per acre for sequential applications. The combined total of all in-crop postemergence treatments must not exceed 96 fluid ounces per acre.

Southeast
Narrow row, drilled, or wide-row soybeans: An in-crop application of this product will provide effective control of the initial and stand of labeled weeds. For best results, an initial application of 32 fluid ounces per acre (fl oz/A) on 3-6" weeds is specified. Weeds will generally be 3-6" tall 2 to 3 weeks after planting.

Weed Height (inches)	Rate (fluid oz/A)
3-6	32
6-12	48

Under adverse growing conditions such as drought, hail, wind damage or a poor soybean stand that slows or delays canopy closure, a sequential application of this product at 16 to 32 fluid ounces per acre may be necessary to control late flushes of weeds.

Sequential Application (if needed)*

Weed Height (inches)	Rate (fluid oz/A)
2-3	16
3-6	24
6-12	32

*Combined total application in-crop not to exceed 96 fluid ounces per acre.

Florida pusley, hemp sesbania and spurred anoda: Apply 32 fl oz/A to weeds 2-4" for the initial application. Apply 32 fl oz/A when these weeds are 3-6" tall if a sequential application is necessary.

Morningglory, black nightshade, groundcherry, and Pennsylvania smartweed: Apply 24 fl oz/A on 1-3" weeds, 32 fl oz/A on 3-6" weeds, or 48 fl oz/A on 6-12" weeds for the initial application.

Some weeds, such as black nightshade, broadleaf signalgrass, Texas panicum, burcucumber, and sicklepod, with multiple germination times may require a sequential application of this product. Suppressed or stunted weeds may also require sequential applications. Sequential applications should be made after some regrowth has occurred. Use a minimum of 16 fluid ounces of this product per acre for sequential applications. The combined total of all in-crop postemergence treatments must not exceed 96 fluid ounces per acre.

Delta/Mid-South
Narrow row, drilled, or wide row soybeans: An in-crop application of this product will provide effective control of the initial stand of labeled weeds. A sequential application will be required to control new flushes of weeds. For best results, an initial application of 32 fluid ounces per acre (fl oz/A) on 2-4" weeds is specified. Weeds will generally be 2-4" tall 2 to 3 weeks after planting.

Initial Treatment

Weed Height (inches)	Rate (fluid oz/A)
2-4	32
5-12	48

Sequential Application*

Weed Height (inches)	Rate (fluid oz/A)
2-3	16
3-6	24
6-12	32

*Combined total application in-crop not to exceed 96 fluid ounces per acre.

Hemp sesbania and spurred anoda: Apply a sequential treatment of 32 fl oz/A at 3-6" tall weeds if necessary.

Some weeds, such as black nightshade, broadleaf signalgrass, Texas panicum, burcucumber, and sicklepod, with multiple germination times may require a sequential application of this product. Suppressed or stunted weeds may also require sequential applications. Sequential applications should be made after some regrowth has occurred. Use a minimum of 16 fluid ounces of this product per acre for sequential applications. The combined total of all in-crop postemergence treatments must not exceed 96 fluid ounces per acre.

Perennial Weeds Rate
A 32 to 64 fluid ounces per acre rate (single or multiple applications) of this product will control or suppress perennial weeds such as: bermudagrass, Canada thistle, common milkweed, field bindweed, hemp dogbane, horsenettle, marestail (horseweed), nutsedge, quackgrass, rhizome johnsongrass, redvine, trumpetcreeper, swamp smartweed, and wirestem muhly.

For best results, allow perennial weed species to achieve at least 6" of growth before spraying with Makaze. For additional information on perennial weeds, see the "PERENNIAL WEEDS RATE TABLE ALPHABETICALLY BY SPECIES" on this label. For some perennial species, repeat applications may be required to eliminate crop competition throughout the growing season.

Cotton with the Roundup Ready® Gene – In Crop Applications
WARNING: LOVELAND PRODUCTS, INC. RECOMMENDS THIS PRODUCT FOR USE ONLY OVER-THE-TOP OF OR DIRECTED ONTO IMPROVED COTTON VARIETIES THAT ARE DESIGNATED AS COTTON WITH THE ROUNDUP READY® GENE. SEVERE INJURY OR DEATH OF COTTON WILL RESULT IF ANY COTTON VARIETIES NOT PROPERLY DESIGNATED AS HAVING THE ROUNDUP READY® GENE ARE SPRAYED WITH THIS PRODUCT. AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, OR FRUIT OF CROPS, OR ANY DESIRABLE PLANTS AND TREES, OTHER THAN CROPS WITH THE ROUNDUP READY® GENE, SINCE SEVERE INJURY OR DESTRUCTION WILL RESULT.

ROUNDUP READY® COTTON VARIETIES MUST BE PURCHASED FROM AN AUTHORIZED LICENSED SEED SUPPLIER. THE DESIGNATION "ROUNDUP READY", INDICATES THE COTTON VARIETY CONTAINS A PATENTED PROPRIETARY TRAIT. IT IS UNLAWFUL TO SELL OR PLANT SAVED SEED.

COTTON WITH THE ROUNDUP READY® GENE MAY ONLY BE USED FOR PLANTING A COMMERCIAL CROP IN A SINGLE SEASON. SEED MAY NOT BE SAVED FOR REPLANTING AND SAVED SEED MAY NOT BE SUPPLIED TO OTHERS FOR REPLANTING. LOVELAND PRODUCTS, INC. DOES NOT WARRANT THE SAFETY OR PERFORMANCE OF THIS PRODUCT WHEN USED ON "BROWN BAG" OR FARMER-SAVED SEED.

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Application Instructions
This product will control many troublesome weeds with over-the-top, post-directed, hooded sprayer, or preharvest applications in Roundup Ready® cotton.

Maximum Allowable Yearly Rates

1. Combined total per year for all applications	8 quarts/A
2. Preplant, Preemergence applications	5 quarts/A
3. Total in-crop applications from cracking to layby	4 quarts/A
4. Maximum preharvest application rate	2 quarts/A

For ground applications with broadcast equipment, apply this product in 5 to 20 gallons of spray solution per acre. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

For aerial applications apply this product in 3 to 15 gallons of water per acre.

DO NOT EXCEED A MAXIMUM RATE OF 1 QUART PER ACRE OF THIS PRODUCT WHEN MAKING APPLICATIONS BY AIR. AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHICH DO NOT CONTAIN THE ROUNDUP READY® GENE. Do not apply during low-level inversion conditions, when winds are gusty or any other conditions which favor drift. Drift may cause damage to any vegetation contacted to which treatment is not intended. To prevent injury to adjacent desirable vegetation, appropriate buffer zones must be maintained.

There are no rotational crop restrictions following applications of this product.

Sprayer Preparation: It is important that sprayer and mixing equipment be clean and free of pesticide residue before making applications of this product to Roundup Ready® cotton. Follow the cleaning procedures specified on the label of the product(s) previously used. Cotton is very sensitive to many herbicides at extremely low concentrations and care should be taken to thoroughly clean all equipment prior to use.

In addition to uses listed on this label, the following applications can be made:
Over-the-top application: This product may be applied by aerial or ground application equipment postemergence to Roundup Ready® cotton from the ground cracking stage until the four leaf (node) stage of development (until the fifth true leaf reaches the size of a quarter). Over-the-top applications made after the fourth leaf (node) stage of development may result in boll loss, delayed maturity and/or yield loss. Any single over-the-top broadcast application should not exceed 1 quart per acre. No more than two over-the-top broadcast applications may be made from crop emergence through the four leaf (node) stage of development. Sequential over-the-top applications of this product must be at least 10 days apart and cotton must have at least two nodes of incremental growth between applications.
NOTE: Always plant into a weed free seedbed. In no-till and stale seedbed systems, always burn down existing weeds before cotton emerges. Apply a preplant burndown treatment of 16-48 fluid ounces per acre of this product.

Post-directed or hooded applications: This product may be applied using precision post-directed or hooded sprayers to Roundup Ready® cotton through layby. Be especially careful to minimize contact of the spray with cotton leaves. At this stage, post-directed equipment should be used which directs the spray to the base of the cotton plants. Place nozzles in a low position directing a horizontal spray pattern under the cotton leaves to contact weeds in the row. For best results, make applications while weeds are small (less than 3 inches). Minimize spray drift onto the leaves of the cotton plants by maintaining low spray pressure (less than 30 PSI). Applications that contact the cotton leaves may result in boll loss, delayed maturity and/or yield loss. Any single post-directed application should not exceed 1 quart per acre of this product. No more than two applications should be made from the fifth leaf through layby. Sequential in-crop applications of this product must be at least 10 days apart and cotton must have at least two nodes of incremental growth between applications.

Salvage Treatment: This treatment may be used after the four leaf stage of development and should only be used where weeds threaten to cause the loss of the crop. One quart per acre may be applied either as an over-the-top application or as a post-directed treatment sprayed higher on the cotton plants and over the weeds. NOTE: SALVAGE TREATMENTS WILL RESULT IN SIGNIFICANT BOLL LOSS, DELAYED MATURITY AND/OR YIELD LOSS. NO MORE THAN ONE SALVAGE TREATMENT SHOULD BE USED PER GROWING SEASON.

Weeds controlled: For specific rates of application and instructions for control of various annual and perennial weeds, refer to the "ANNUAL and PERENNIAL" Weed Rate Tables of this label. Makaze applied at 1 quart per acre will burndown or suppress the growth of the following perennial weeds and reduce crop competition: yellow and purple nutsedge, rhizome johnsongrass, common bermudagrass, silverleaf nightshade, trumpet creeper, and redvine. Fall preharvest applications may be required for control of these perennial weeds.

Tank mixtures with other herbicides may result in reduced weed control or crop injury and are not recommended for over-the-top applications of this product.

Some weeds with multiple germination times or suppressed (stunted) weeds may require sequential applications of this product for control.

Preharvest applications: This product may be applied for preharvest annual and perennial weed control as a broadcast treatment to Roundup Ready® cotton after 20% boll crack. Allow a minimum of 7 days between application and harvest. For specific recommendations refer to the "COTTON" section on this label.

NOTE: Makaze will not enhance the performance of harvest aids when applied to Roundup Ready® cotton. DO NOT APPLY MAKAZE TO CROPS GROWN FOR SEED.

APPLICATION TO ROUNDUP READY FLEX COTTON PRE-PLANT, AT-PLANTING, PRE-EMERGENCE, POST-EMERGENCE, PRE-HARVEST

See "GENERAL INFORMATION" and "MIXING" sections of the label booklet for Makaze herbicide for essential product performance information.

The use of the over-the-top applications described in this supplemental label on cotton varieties other than Roundup Ready Flex cotton will cause crop injury and reduced yields. Drift of this product from applications made to Roundup Ready Flex cotton onto adjacent fields of post 4-leaf (node) Roundup Ready cotton may cause extensive injury including boll loss, delayed maturity and/or yield loss.

NOTE: The instructions provided in this label are specific to, and should only be used with, varieties designated as Roundup Ready Flex cotton. DO NOT combine the instructions in this label with those in the "Roundup Ready Cotton" section of the Makaze herbicide label booklet, or with any other Roundup Ready cotton or Roundup Ready Flex cotton instructions on labeling for this or other glyphosate-containing product. See "Annual Maximum Use Rate" in the "GENERAL INFORMATION" section of the Makaze herbicide label booklet, for additional information.

TYPES OF APPLICATIONS: Pre-plant, At-Planting, Pre-emergence, Post-emergence, Pre-harvest.

Maximum Allowable Combined Application Quantities Per Season

Combined total per year for all applications	8.0 quarts per acre
Calculate the combined rate to be used for all preplant, in-crop and preharvest applications, to ensure that the total does not exceed the maximum allowed rate per acre per year shown above.	
Preplant, At-planting, Preemergence applications	5.0 quarts per acre
Total in-crop applications from ground cracking to 60 percent open bolls	6.0 quarts per acre
Maximum allowed from 60 percent bolls open to 7 days prior to harvest	2.0 quarts per acre

PRECAUTIONS and RESTRICTIONS: See the "ROUNDUP READY CROPS" section of the label booklet provided with the product container for general precautionary instructions for use in Roundup Ready crops.

Pre-plant, Pre-emergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting Roundup Ready Flex cotton. Always plant into a weed free seedbed. In no-till and stale seedbed systems, always burn down existing weeds before cotton emerges.

Post-emergence
USE INSTRUCTIONS: When applied in accordance with this label, Makaze herbicide will control labeled annual grasses and broadleaf weeds in Roundup Ready Flex cotton. To maximize yield potential spray cotton early to eliminate competing weeds. Many perennial weeds will be controlled or suppressed with one or more applications of this product. In general apply, an initial application of 1.0 quart per acre on 1 to 3 inch tall annual grass and broadleaf weeds. This product may be applied by ground application equipment at rates up to 1.5 quarts per acre per application postemergence to Roundup Ready Flex cotton. In addition to broadcast applications, post-directed equipment may be used to achieve weed coverage.

NOTE: For specific rates of application and instructions, refer to the "ANNUAL WEEDS" and "PERENNIAL WEEDS RATE SECTION" in the label booklet for Makaze herbicide.

PRECAUTIONS, RESTRICTIONS: The maximum rate for any single in-crop application of this product is 1.5 quart per acre made using ground application equipment. In-crop application rates above 1.0 quart per acre made alone or with the addition of other crop chemical products containing surfactant may cause a crop response including leaf speckling or leaf necrosis. Except for pre-harvest use, do not exceed a maximum rate of 1.0 quart per acre of this product when making applications by air. Between layby and 60 percent open bolls, the maximum combined total rate of this product that may be applied is 2.0 quarts per acre. The maximum combined total of all applications made from crop emergence through 60 percent open bolls must not exceed 6.0 quarts per acre.

Pre-harvest
USE INSTRUCTIONS: This product may be applied for pre-harvest annual and perennial weed control as a broadcast treatment to Roundup Ready Flex cotton after 60 percent boll crack. Up to 2.0 quarts of this product may be applied using either aerial or ground spray equipment.

NOTE: This product will not enhance the performance of harvest aids when applied to Roundup Ready Flex cotton.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest of Roundup Ready Flex cotton. Do not apply this product as a preharvest application to cotton grown for seed, as a reduction in germination or vigor may occur.

Ground Broadcast Equipment
Use the specified rates of Makaze herbicide in 5 to 20 gallons of spray solution per acre. As density of weeds increases, spray volume should be increased within the recommended range to ensure complete and uniform coverage of the target. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. Check for even distribution of spray droplets.

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Aerial Equipment
Apply this product in 3 to 15 gallons of water per acre. Except for pre-harvest use do not exceed a maximum rate of 1.0 quart per acre of this product when making applications by air. Extreme care must be used when applying this product to prevent injury to desirable plants and crops which do not contain a Roundup Ready gene. Drift may cause damage to any vegetation contacted to which treatment is not intended including boll loss, delayed maturity and/or yield loss on Roundup Ready cotton exceeding the 4 leaf (node) stage of development.

PRECAUTIONS, RESTRICTIONS: See the "Aerial Equipment" part of the "APPLICATION EQUIPMENT AND TECHNIQUES" section of the Makaze herbicide label booklet for information on proper use and calibration of this equipment.

Sprayer Preparation
Cotton is very sensitive to many herbicides at extremely low concentrations and care should be taken to thoroughly clean all equipment prior to use. It is important that the sprayer, including tank and hoses, and mixing equipment be clean and free of pesticide residue before making applications of this product to Roundup Ready Flex cotton. Follow the cleaning procedures specified on the label of the product(s) previously used.

ATTENTION: USE OF THIS PRODUCT IN ACCORDANCE WITH LABEL DIRECTIONS IS EXPECTED TO RESULT IN NORMAL GROWTH OF ROUNDUP READY FLEX COTTON, HOWEVER, DUE TO THE SENSITIVITY OF COTTON FRUITING TO VARIOUS ENVIRONMENTAL CONDITIONS, AGRONOMIC PRACTICES AND OTHER FACTORS IT IS IMPOSSIBLE TO ELIMINATE ALL RISKS ASSOCIATED WITH THIS PRODUCT, EVEN WHEN APPLICATIONS ARE MADE IN CONFORMANCE WITH THE LABEL SPECIFICATIONS. IN SOME CASES, THESE FACTORS CAN RESULT IN BOLL LOSS, DELAYED MATURITY AND/OR YIELD LOSS.

Read the "CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY" in the label booklet for Makaze herbicide before using. For over-the-top uses on Roundup Ready crop varieties crop safety and weed control performance are not warranted by Loveland Products, Inc. when this product is used in conjunction with "brown bag" or "bin run" seed saved from previous year's production and replanted. These terms apply to this supplemental labeling and if these terms are not acceptable, return the product unopened at once.

Seed Production of Canola with the Roundup Ready® Gene
THIS PRODUCT MAY BE USED FOR CONTROL OF NON-GLYPHOSATE TOLERANT CANOLA IN PRODUCTION FIELDS OF CANOLA CONTAINING THE ROUNDUP READY® GENE. SEVERE INJURY OR DEATH WILL RESULT IF CANOLA VARIETIES WHICH DO NOT CONTAIN THE ROUNDUP READY® GENE ARE SPRAYED WITH THIS PRODUCT.

ROUNDUP READY® CANOLA VARIETIES MUST BE PURCHASED FROM AN AUTHORIZED LICENSED SEED SUPPLIER. THE DESIGNATION, "ROUNDUP READY®", INDICATES THE CANOLA VARIETY CONTAINS A PATENTED PROPRIETARY TRAIT. IT IS UNLAWFUL TO SELL OR PLANT SAVED SEED.

CANOLA WITH THE ROUNDUP READY® GENE MAY ONLY BE USED FOR PLANTING A COMMERCIAL CROP IN A SINGLE SEASON. SEED MAY NOT BE SAVED FOR REPLANTING AND SAVED SEED MAY NOT BE SUPPLIED TO OTHERS FOR REPLANTING. LOVELAND PRODUCTS, INC. DOES NOT WARRANT THE SAFETY OR PERFORMANCE OF THIS PRODUCT WHEN USED ON "BROWN BAG" OR FARMER-SAVED SEED.

Use
This product will control non-glyphosate tolerant canola in seed production fields of canola containing the Roundup Ready® gene. This product may be applied using ground spray equipment only. Apply 1 pint of this product in 5 to 20 gallons of spray solution per acre as a broadcast spray. A second application of 1 pint per acre may be applied, if needed to control non-glyphosate tolerant canola plants.

DO NOT EXCEED A MAXIMUM RATE OF 1 QUART OF THIS PRODUCT PER ACRE PER SEASON.

Application timing – This product can be applied to Roundup Ready® canola from emergence to the pre-flower (early bolting) stage.

Treated canola may not be used for food or feed. Do not feed or graze treated canola. Do not process treated canola for food or feed.

PREPLANT, POSTEMERGENT AND/OR OVER-THE-TOP APPLICATIONS TO CANOLA WITH THE ROUNDUP READY® GENE

General Information
USE THIS PRODUCT ONLY ON CANOLA WHICH CONTAINS THE ROUNDUP READY® GENE.

DO NOT USE THIS PRODUCT ON CANOLA WITH THE ROUNDUP READY® GENE PLANTED IN THE FOLLOWING STATES: ALABAMA, DELAWARE, FLORIDA, GEORGIA, KENTUCKY, MARYLAND, NEW JERSEY, NORTH CAROLINA, SOUTH CAROLINA, TENNESSEE, VIRGINIA AND WEST VIRGINIA.

- Applying this product to canola which is not designated as Roundup Ready® will result in severe crop injury and yield loss. Avoid contact with foliage, green stems, or fruit of crops, or any desirable plants which do not contain the Roundup Ready® gene, since severe crop injury or destruction will result.
- The Roundup Ready® designation indicates the canola contains a patented gene which provides tolerance to this herbicide. Information on Roundup Ready® canola may be obtained from your seed supplier or Loveland Products, Inc. representative.

Use
This product will control many troublesome emerged weeds when applied preplant, preemergent and/or with over-the-top application in Roundup Ready® canola. Allow a minimum of 60 days between last application and canola harvest.

Maximum Allowable Combined Application Quantities Per Season

1. Preplant and preemergence application	2 quarts/A
2. Total in-crop application from emergence to 6-leaf	1 quarts/A

For ground applications with broadcast equipment, apply this product in 5 to 20 gallons of spray solution per acre. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

For aerial applications apply this product in 3 to 15 gallons of water per acre.

DO NOT EXCEED A MAXIMUM RATE OF 16 OUNCES PER ACRE OF THIS PRODUCT WHEN MAKING APPLICATIONS BY AIR. AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHICH DO NOT CONTAIN THE ROUNDUP READY® GENE. Do not apply during low-level inversion conditions, when winds are gusty or under any other conditions which favor drift. Drift may cause damage to any vegetation contacted to which treatment is not intended. To prevent injury to adjacent desirable vegetation, appropriate buffer zones must be maintained.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas in which treatment was not intended. The likelihood of injury occurring from the use of 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) which are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations which dispense spray as fine spray droplets. Do not angle nozzles forward into the airstream and do not increase spray volume by increasing nozzle pressure.

There are no rotational crop restrictions following applications of this product.

Sprayer Preparation: It is important that sprayer and mixing equipment be clean and free of pesticide residue before making applications of this product to Roundup Ready® canola. Follow the cleaning procedures specified on the label of the product(s) previously used. Canola is very sensitive to many herbicides at extremely low concentrations and care should be taken to thoroughly clean all equipment prior to use.

Preplant or Preemergent Applications: This product may be applied by aerial or ground application equipment prior to planting or emergence of canola. The maximum combined application rate from all preplant and preemergent applications should not exceed 2 quarts per acre per season.

NOTE: In no-till and stale seedbed systems, always use a burndown treatment to control existing weeds before canola emerges. Apply a preplant burndown treatment of 16-32 fluid ounces per acre of this product.

Over-the-top applications: This product may be applied by aerial or ground application equipment postemergence to Roundup Ready® canola from emergence through the six-leaf stage of development. To maximize yield potential spray canola early to eliminate competing weeds. Any single over-the-top broadcast application should not exceed 16 ounces per acre. No more than two over-the-top broadcast applications may be made from crop emergence through the six-leaf stage of development. Sequential over-the-top applications of this product must be at least 10 days apart.

Weeds controlled: For specific rates of application and instructions for control of various annual and perennial weeds, refer to the "ANNUAL" Weed Rate Table of this label.

Tank mixtures with other herbicides, insecticides, or fungicides may result in reduced weed control or crop injury and are not recommended for over-the-top applications of this product.

Some weeds with multiple germination times or suppressed (stunted) weeds may require sequential applications of this product for control. The second application should be made after some regrowth has occurred and at least 10 days after a previous application of this product.

This product will control or suppress most perennial weeds. For some perennial weeds, repeat applications may be required to eliminate crop competition throughout the growing season.

For over-the-top uses on Roundup Ready® crop varieties, crop safety and weed control performance are not warranted by Loveland Products, Inc. when this product is used in conjunction with "brown bag" or "bin run" seed saved from previous year's production and replanted.

Postemergence Applications to Corn with the Roundup Ready® Gene
USE THIS PRODUCT ONLY ON CORN SEED DESIGNATED AS CONTAINING THE ROUNDUP READY® GENE.

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- Applying this product to corn varieties which are not designated as Roundup Ready® will result in severe crop injury and yield loss. Avoid contact with foliage, green stems, or fruit of crops, or any desirable plants which do not contain the Roundup Ready® gene since severe injury or destruction will result.
- Roundup Ready® varieties must be purchased from an authorized seed supplier. Crop safety and weed control performance are not warranted by Loveland Products, Inc. when this product is used in conjunction with "brown bag" or "bin run" corn seed saved from previous year's production and replanted.
- The Roundup Ready® designation indicates that the corn contains a patented gene which provides tolerance to Loveland Products, Inc.'s Glyphosate brand herbicides. Information on Roundup Ready® corn may be obtained from your seed supplier.

Application Instructions
This product may be applied postemergence to Roundup Ready® corn during the period beginning at corn emergence and continuing through the 12-leaf stage or until corn height reaches 30 inches, whichever comes first. Single in-crop applications of this product are not to exceed 1 quart per acre. Sequential in-crop applications of this product should not exceed 2 quarts per acre per growing season. Total Makaze use should not exceed 8 quarts per acre per year.

Allow a minimum of 50 days between application of this product and harvest of corn forage and 7 days between application and harvest of corn grain. Allow a minimum of 14 days between in-crop applications of this product. THE USE OF ADDITIVES FOR IN-CROP APPLICATIONS TO ROUNDUP READY® CORN IS PROHIBITED.

	Maximum Yearly Rates Allowed
Preplant/Preemergence (Maximum)	5 quarts/A
Total in-crop applications from emergence to 12-leaf stage or 30 inches	2 quarts/A
Maximum preharvest rate	1 quart/A
Combined total per year for all applications	8 quarts/A

When applied as directed, this product controls annual grass and broadleaf weeds in Roundup Ready® corn. Many perennial grasses and broadleaf weeds will be controlled or suppressed with one or more applications of this product. Applications should be made to actively growing weeds before they reach the maximum size listed in the "ANNUAL" and "PERENNIAL" Weed Rate Tables on this label. Refer to the "MIXING" section of this label for proper use instructions.

There are no rotational crop restrictions following applications of this product.

ATTENTION: AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift, or splash onto other desirable vegetation since minute quantities of this product can cause severe damage or destruction to crop plants in non-target areas. The likelihood of plant injury occurring from drift of this product is greatest when winds are gusty or in excess of 5 miles per hour. Even under lesser wind velocities, avoid conditions which allow spray drift to occur such as combinations of pressure and nozzle type that will result in fine particles (mist) which are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR SPRAY PRESSURE.

For ground applications: Use the specified rates of this product in 5 to 20 gallons of spray solution per acre as a broadcast spray. See "WEEDS CONTROLLED" section below for specific rates. Carefully select proper nozzles and spray pressure to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

For aerial applications: Use the specified rates of this product in 3 to 15 gallons of spray solution per acre. Do not exceed 1 quart per acre. See "WEEDS CONTROLLED" section below. AVOID DRIFT – DO NOT APPLY DURING INVERSION CONDITIONS, WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITIONS WHICH FAVOR DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Weeds controlled
For specific rates of applications and instructions for control of various annual and perennial weeds, refer to the "ANNUAL" and "PERENNIAL" Weed Rate Tables on this label. Makaze at up to 1 quart per acre will burndown or suppress the growth of the following perennial weeds and reduce crop competition: nutsedge, rhizome johnsongrass, quackgrass, Canada thistle, wirestem muhly.

Sequential Applications: Some weeds with multiple germination times or suppressed (stunted) weeds may require a second application of this product. The second application should be made after some regrowth has occurred.

Tank mixtures
A tank mixture of Makaze plus Micro-Tech® may be used for postemergence and residual control of annual weeds in corn. This tank mixture may be made during the period beginning at corn emergence and continuing until corn height reaches 5 inches.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

An Makaze tank mixture with atrazine, Rifle®, Clarity®, Permit®, 2,4-D may be used for postemergence control of additional annual weeds in corn. An Makaze tank mixture with atrazine may be made during the period beginning at corn emergence and continuing until corn height reaches 12 inches. An Makaze tank mixture with Rifle® or Clarity® at 0.125 to 0.25 lb per acre may be made during the period beginning at corn emergence and continuing until corn height reaches 30 inches. An Makaze tank mixture with Permit® may be made during the period beginning at corn emergence and continuing until corn is at the five leaf stage or corn height reaches 30 inches. An Makaze mixture with 2,4-D at 0.125 to 0.25 lb per acre may be made during the period beginning at corn emergence and continuing until corn is at the five leaf stage or corn height reaches 8 inches, whichever comes first.

Refer to the specific product label and observe all precautions, mixing and application instructions for all products used in tank mixtures.

FOR POSTEMERGENCE APPLICATIONS WITH DROP NOZZLES TO CORN UP TO 48" TALL WITH THE ROUNDUP READY® GENE

GENERAL INFORMATION

LOVELAND PRODUCTS, INC. RECOMMENDS USE OF THIS PRODUCT FOR POSTEMERGENCE APPLICATION ONLY ON CORN HYBRIDS DESIGNATED AS CONTAINING THE ROUNDUP READY® GENE.

- Applying this product to corn hybrids which are not designated as Roundup Ready® will result in severe crop injury and yield loss.
- The Roundup Ready® designation indicates that the corn contains a patented gene which provides tolerance to Loveland Products, Inc.'s Glyphosate brand herbicides. Information on Roundup Ready® corn may be obtained from your seed supplier

APPLICATION INSTRUCTIONS

The instructions provided in this section allow application to Roundup Ready corn using drop nozzles through 48 inches. The instructions printed in the "Corn with the Roundup Ready Gene" section of the label booklet for Makaze along with those included in this section are all applications which can be made onto Roundup Ready corn during the complete cropping season. See the general "Roundup Ready Crops" section of the Makaze label booklet for additional information.

When applied as directed, this product will control labeled annual grasses and broadleaf weeds in Roundup Ready® corn. Many perennial grasses and broadleaf weeds will be controlled or suppressed with one or more applications of this product.

There are no rotational crop restrictions following applications of this product.

POSTEMERGENCE WITH DROP NOZZLES

USE INSTRUCTIONS: For Roundup Ready corn from emergence through the V8 stage (8 leaves with collars) or until corn height reaches 30 inches, whichever comes first, this product may be applied over-the-top broadcast or with drop nozzles. When corn height is 24 to 30 inches (free standing), for optimum spray coverage and weed control drop nozzles are recommended. For corn heights 30 to 48 inches (free standing), apply this product only using ground application equipment with drop nozzles adjusted to avoid spraying into the whorls of the corn plants.

Single in-crop applications of this product should not exceed 32 fluid ounces per acre. The maximum combined total of multiple in-crop applications from emergence through the 48-inch stage is 64 fluid ounces per acre.

PREPLANT, POSTEMERGENT AND/OR OVER-THE-TOP APPLICATIONS TO SUGAR BEETS WITH THE ROUNDUP READY® GENE

LOVELAND PRODUCTS, INC., RECOMMENDS USE OF THIS PRODUCT FOR POSTEMERGENCE APPLICATION ONLY ON SUGAR BEET VARIETIES DESIGNATED AS CONTAINING A ROUNDUP READY GENE.

The Roundup Ready designation indicates that the sugar beet contains a patented gene, which provides tolerance to this product. Information on Roundup Ready sugar beet may be obtained from your seed supplier or Loveland Products representative. Roundup Ready crop varieties must be purchased from an authorized licensed seed supplier.

See the "ROUNDUP READY CROPS" section of the Makaze label booklet for general precautionary instructions for use in Roundup Ready crops. Do NOT combine these instructions with other recommendations made for crop varieties that do not contain a Roundup Ready gene listed in the "ANNUAL AND PERENNIAL CROPS (Alphabetical)" sections of the Makaze label booklet.

TYPES OF APPLICATIONS: Preplant, At-Planting, Preemergence, Postemergence (In-crop) APPLICATION INSTRUCTIONS

MAXIMUM ALLOWABLE APPLICATION RATES
Combined total per year for all application 8.0 quarts per acre
Preplant, Preemergence applications 5.0 quarts per acre
Emergence to 8 leaf stage 2.5 quarts per acre
Between 8 leaf stage and canopy closure 2.0 quarts per acre

GENERAL PRECAUTIONS, RESTRICTIONS: See the "ROUNDUP READY CROPS" section of this label for general precautionary instructions for use in Roundup Ready crops. Tank mixtures of this product with herbicides, insecticides or fungicides may result in crop injury or reduced weed control.

Preplant, At-Planting, Preemergence
USE INSTRUCTIONS: This product may be applied before, during or after planting of Roundup Ready sugar beets.

PRECAUTIONS, RESTRICTIONS: Maximum quantity of this product that may be applied for all preplant, at-planting and preemergence applications combined is 5.0 quarts per acre per season.

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Postemergence (In-crop)
USE INSTRUCTIONS: This product may be applied over the top of Roundup Ready sugar beets for control of annual grasses and broadleaf weeds from emergence to 30 days prior to harvest. To maximize yield potential, spray sugar beets early to eliminate competing weeds. Up to 4 sequential applications of this product may be made with at least 10 days between applications. This product will control or suppress most perennial weeds. For some perennial weeds, repeat applications may be required to eliminate crop competition throughout the growing season.

RESTRICTIONS: Follow all general precautionary instructions for use in Roundup Ready crops.
- The combined total application from crop emergence through harvest must not exceed 4.5 quarts per acre.
- The maximum rate for any single application between emergence to the 8 leaf stage is 1.5 quarts per acre.
- The maximum rate for any single application between the 8 leaf stage and canopy closure is 1.0 quart per acre.
- Allow a minimum of 30 days between last application and sugar beet harvest.
- For any crop NOT listed in the "CROPS" section of this label booklet, applications must be at least 30 days prior to planting.

FARMSTEADS
Types of Applications: General nonselective weed control, trim-and-edge, chemical mowing, cut stumps, habitat management, rangelands.

General nonselective weed control, Trim-and-edge

Use Instructions: This product may be used to control annual weeds, perennial weeds and woody brush which are found in any part of the farmstead, including building foundations, along and in fences, in dry ditches and canals, along ditchbanks, farm roads, shelterbelts, prior to landscape plantings and equipment storage areas.

This product may be tank mixed with the following products. Refer to these product labels for approved farmstead sites and application rates. For annual weeds, use 1 quart per acre of this product when weeds are less than 6 inches tall and 1.5 quarts per acre when weeds are greater than 6 inches tall. For perennial weeds, apply 2 to 5 quarts per acre in these tank mixes. For tank mixtures with these products through backpack sprayers, handguns or other high-volume spray-to-wet applications, see the "HAND-HELD AND HIGH VOLUME EQUIPMENT" section of this label for rates.

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

Diuron	Princep® Caliber 90	Rifle®	2,4-D
Simazine 4L			

Rifle® and 2,4-D mixtures may not be applied by air in California

Chemical Mowing
Use Instructions: This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Apply this product at a rate of 6 to 8 fluid ounces per acre. Use 8 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass or quackgrass covers. Use 6 fluid ounces of this product per acre when treating Kentucky bluegrass. Apply treatments in 10 to 20 gallons of spray solution per acre. Chemical mowing applications may be made along farm ditches and other parts of farmsteads.

Precautions, Restrictions: Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Cut Stumps
Types of Application: Treating cut stumps in any noncrop site listed on this label.

Use Instructions: This product will control regrowth of cut stumps and resprouts of many types of woody brush and tree species, some of which are listed below. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder	Oak	Sweetgum
Eucalyptus	Reed, giant	Tan oak
Madrone	Salt-cedar	Willow

PRECAUTIONS, RESTRICTIONS: DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMP. INJURY RESULTING FROM ROOT GRAFTING MAY OCCUR IN ADJACENT WOODY BRUSH OR TREES.

Habitat Management
Types of Uses: Habitat restoration and maintenance, wildlife food plots

Habitat restoration and maintenance:
Use Instructions: This product may be used to control exotic and other undesirable vegetation in habitat management areas. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad-spectrum vegetation control requirements in habitat management areas. Spot treatments can be made to selectively remove unwanted plants for habitat maintenance and enhancement. The tank mixtures listed in this section of the label may be used for habitat restoration and maintenance.

Wildlife food plots:
Use Instructions: This product may be used as a site preparation treatment to control 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 7 days after application before tillage.

Rangelands
Types of Application: Dormant

Use Instructions: This product will control or suppress many weeds, including downy brome, cheat grass, cereal rye, medusahead rye and jointed goatgrass in dormant rangeland. Apply 8 to 16 fluid ounces of this product per acre in the early spring when the weeds have greened up, but desirable grasses, such as crested and tall wheatgrass, are still truly dormant. Slight discoloration of the desirable grasses may occur, but they will regreen and regrow under moist soil conditions as effects of this product wear off.

Precautions, Restrictions: Do not use ammonium sulfate when spraying dormant rangeland grasses with this product. Do not make more than one application per year.

ANNUAL WEEDS RATE TABLES ALPHABETICALLY BY SPECIES
Water carrier volumes of 3 to 10 gallons per acre for ground applications and 3 to 5 gallons per acre for aerial applications.

Apply to actively growing annual weeds.

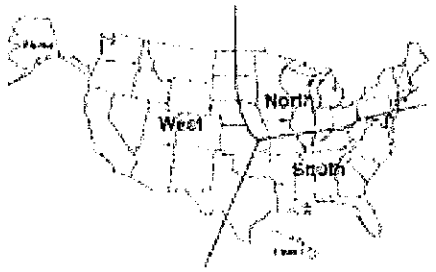
Do not tank mix with soil residual herbicides when using these rates unless otherwise specified.

For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.

For those rates less than 48 fluid ounces per acre, this product may be used up to 48 fluid ounces per acre where heavy weed densities exist.

Refer to this map for location of the regions listed in the annual weed tables below.

ANNUAL WEEDS RATE TABLE, NORTH AND SOUTH REGIONS



WEED SPECIES	REGION	RATE (FLUID OUNCES PER ACRE) MAXIMUM HEIGHT/LENGTH					
		12	16	24	32	40	48
Amoda, spurred		-	1"	2"	3"	5"	8"
Barley		-	18"	18"+	-	-	-
Barnyardgrass	South	-	3"	5"	7"	9"	12"
	North	-	-	6"	12"	-	-
Bassia, fivehook					6"		
Bittercress		-	12"	20"	-	-	-
Bluegrass, annual		-	10"	-	-	-	-
Brome, downy		6"	-	-	-	-	-
Brome, Japanese		-	6"	-	24"	-	-
Browntop panicum		-	6"	8"	12"	-	24"
burcucumber		-	-	6"	12"	-	-
Buttercup		-	12"	20"	-	-	-
Carolina foxtail		-	20"	-	-	-	-
Carolina geranium		-	-	-	4"	-	9"
Carpetweed		-	-	6"	12"	-	-
Cheat		-	6"	20"	-	-	-
Chervil		-	20"	-	-	-	-
Chickweed		-	12"	18"	-	-	-
Cocklebur		-	12"	18"	24"	-	-
Copperleaf, hophornbeam		-	1"	2"	3"	4"	6"
Copperleaf, Virginia		-	1"	2"	3"	4"	6"
Corn		-	12"	20"	-	-	-
Corn speedwell		-	12"	-	-	-	-
Crabgrass		-	12"	18"	-	-	-
Cutleaf evening primrose		-	-	-	3"	-	6"
Dwarfdandelion		-	20"	-	-	-	-
Eastern mannagrass		-	8"	12"	-	-	-

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WEED SPECIES	REGION	RATE (FLUID OUNCES PER ACRE) 12	16	24	32	40	48
		MAXIMUM HEIGHT/LENGTH					
Eclipta		-	4"	8"	12"	-	-
Fall panicum	South	-	4"	6"	8"	12"	24"
	North	-	6"	12"	18"	-	-
Falsedandelion		-	20"	-	-	-	-
Falseflax, smallseed		-	12"	-	-	-	-
Fiddleneck		-	-	-	6"	-	12"
Field pennycress		-	6"	12"	-	-	-
Filaree		-	-	-	-	-	12"
Fleabane, annual		-	6"	20"	-	-	-
Fleabane, hairy (*Conyza bonariensis*)		-	6"	-	-	-	-
Fleabane, rough		-	3"	6"	12"	-	-
Florida pusley		-	-	-	12"	-	-
Foxtail	South	-	8"	12"	20"	-	-
	North	18"	18"+	-	-	-	-
Goatgrass, jointed		-	6"	-	-	-	-
Goosegrass		-	3"	5"	8"	-	18"
Grain sorghum (milo)		-	6"	12"	20"	-	-
Groundsel, common		-	6"	-	-	-	-
Hemp sesbania		-	-	2"	4"	6"	8"
Henbit		-	-	-	6"	-	20"
Horseweed/Marestail	South	-	-	12"	30"	-	-
(*Conyza canadensis*)	North	-	6"	12"	18"	-	-
Itchgrass		-	6"	12"	18"	-	-
Jimsonweed		-	-	6"	-	12"	-
Johnsongrass,	South	-	-	18"	-	-	-
seedling	North	-	12"	18"	-	-	-
Junglerice		-	3"	5"	7"	9"	12"
Knotweed		-	3"	8"	12"	-	20"
Kochia[1]		-	3 to 6"	12"	-	-	-
Lambsquarters		-	6"	8"	12"	-	20"
Little barley		-	20"	-	-	-	-
London rocket		-	6"	-	-	-	-
Mayweed		-	-	2"	6"	12"	18"
Morningglory (*Ipomoea* spp.)		-	-	2"	4"	-	6"
Mustard, blue		6"	-	-	-	-	-
Mustard, tansy		6"	12"	20"	-	-	-
Mustard, tumble		6"	-	-	-	-	-
Mustard, wild		6"	12"	18"	-	-	-
Nightshade, black		-	6"	12"	-	-	-
Oats		-	-	6"	20"	-	-
Pigweed		-	12"	18"	24"	-	-
Plains/Tickseed Coreopsis		-	5"	12"	18"	-	-
Prickly lettuce		-	6"	12"	20"	-	-
Purslane		-	-	-	6"	-	12"
Ragweed, common	South	-	4"	6"	8"	-	12"
	North	-	6"	12"	18"	-	-
Ragweed, giant		-	-	4"	6"	-	11"
Red rice		-	-	-	4"	-	-
Russian thistle		-	-	-	6"	-	-
Rye	South	-	6"	20"	60"	-	-
	North	-	18"	18"+	-	-	-
Ryegrass		-	-	-	6"	-	7"+
Sandbur, field		12"	-	-	-	-	-
Shattercane		-	12"	18"	-	-	-
Sheperdspurse		-	6"	12"	-	-	-
Sicklepod		-	-	2"	4"	-	8"
Signalgrass, broadleaf		-	3"	5"	7"	9"	12"
Smartweed, ladysthumb		-	4"	6"	8"	-	12"
Smartweed, Pennsylvania		-	4"	6"	8"	-	12"
Sowthistle, annual		-	-	-	6"	-	12"
Spanishneedles		-	-	-	8"	-	18"
Speedwell, purslane		-	12"	-	-	-	-
Sprangletop		-	6"	12"	20"	-	-
Spurge, prostrate		-	6"	12"	20"	-	-
Spurge, spotted		-	6"	12"	20"	-	-
Spurry, umbrella		6"	-	-	-	-	-
Stinkgrass		12"	-	-	-	-	-
Sunflower		-	12"	18"	-	-	-
Teasweed/Prickly sida		-	1"	2"	3"	4"	6"
Texas panicum		-	6"	8"	12"	-	24"
Velvetleaf	South	-	2"	3"	4"	5"	8"
	North	-	3"	6"	12"	-	-
Virginia pepperweed		-	18"	-	-	-	-
Waterhemp		-	-	6"	12"	-	-
Wheat	South	-	6"	30"	-	-	-
	North	-	18"	18"+	-	-	-
Wheat (overwintered)		-	6"	18"	-	-	-
Wild oats		-	12"	-	-	-	-
Witchgrass		-	12"	-	-	-	-
Wooly cupgrass		-	6"	12"	-	-	-
Yellowrocket		-	-	12"	20"	-	-

[1]Do not treat kochia in the button stage

ANNUAL WEEDS RATE TABLE, WEST REGION

WEED SPECIES	RATE (FLUID OUNCES PER ACRE) 12	16	24	32	48
	MAXIMUM HEIGHT/LENGTH				
Barley	12"	-	-	-	-
Barnyardgrass	6"	-	-	-	-
Bluegrass, annual	6"	-	-	-	-
Bluegrass, bulbous	-	6"	-	-	-
Brome, downy[1]	6"	-	-	-	-
Buttercup	-	12"	-	-	-
Cheat	-	6"	-	-	-
Chickweed	-	6"	-	-	-
Cocklebur	-	12"	-	-	-
Corn	-	6"	-	-	-
Crabgrass	-	12"	-	-	-
Dwarfdandelion	-	12"	-	-	-
Fall panicum	-	12"	-	-	-
Falseflax, smallseed	-	12"	-	-	-
Field pennycress	-	6"	-	-	-
Filaree	-	-	-	-	12"
Fleabane, hairy (*Conyza bonariensis*)	-	6"	-	-	-
Florida pusley	-	-	-	12"	-
Foxtail	8 fl. oz. for up to 12"				
Goatgrass, jointed	-	6"	-	-	-
Groundsel, common	-	6"	-	-	-
Henbit	-	6"	-	-	-
Horseweed/Marestail (*Conyza canadensis*)	-	6"	-	-	-
Johnsongrass, seedling	-	12"	-	-	-
Lambsquarters	-	6"	-	-	-
London rocket	-	6"	-	-	-
Morningglory (*Ipomoea* spp.)	-	2"	-	-	-
Mustard, blue	6"	-	-	-	-
Mustard, tansy	6"	-	-	-	-
Mustard, tumble	6"	-	-	-	-
Mustard, wild	6"	-	-	-	-
Pigweed	-	12"	-	-	-
Rye	12"	-	-	-	-
Ryegrass, Italian	-	6"	-	-	-
Sandbur, field	12"	-	-	-	-
Shattercane	12"	-	-	-	-
Sheperdspurse	-	6"	-	-	-
Sowthistle, annual	-	6"	-	-	-
Spurge, annual	-	6"	-	-	-
Stinkgrass	12"	-	-	-	-
Texas panicum	-	12"	-	-	-
Wheat	18"	-	-	-	-
Wild oats	-	12"	-	-	-
Witchgrass	-	12"	-	-	-

[1]For control of Downy brome in no-till systems, use 16 fluid ounces per acre.

Annual Weeds – Water Carrier Volumes of 10 to 40 Gallons Per Acre

Apply 1 to 1.5 quarts of this product per acre. Use 1 quart per acre if weeds are less than 6 inches tall and 1.5 quarts per acre if weeds are over 6 inches tall.

These rates will provide control of weeds listed in the annual weed control tables when water carrier volumes are 10 to 40 gallons per acre for ground applications.

Annual Weeds – Tank Mixtures with 2,4-D or Rifle®

This product may be tank mixed with the products listed providing the product tank-mixed is registered for use on this site.

12 to16 fluid ounces of this product plus 0.25 pounds a.i. of Rifle® or 0.5 pounds a.i. of 2,4-D per acre will control the following weeds with the maximum height or length indicated: 6" – prickly lettuce, marestail/horseweed (*Conyza canadensis*), morningglory (*Ipomoea* spp.), kochia (Rifle® only); 12" – cocklebur, lambsquarters, pigweed, Russian thistle.

16 fluid ounces of this product plus 0.5 pounds a.i. of 2,4-D per acre will control the following weeds when they are a maximum height or length of 6 inches: common ragweed, giant ragweed, Pennsylvania smartweed, and velvetleaf.

12 fluid ounces of this product plus 0.25 pounds a.i. of Rifle® or 0.5 pounds a.i. of 2,4-D per acre will control foxtail up to 18".

Refer to the specific product labels for crop rotation restrictions and cautionary statements of all products used in tank mixtures. Some crop injury may occur if Rifle® is applied within 45 days of planting.

DO NOT APPLY RIFLE® OR 2,4-D TANK MIXTURES BY AIR IN CALIFORNIA.

PERENNIAL WEEDS RATE TABLE ALPHABETICALLY BY SPECIES

Apply to actively growing perennial weeds.

NOTE: If weeds have been mowed or tilled, do not treat until plants have resumed active growth and have reached the stages.

Repeat treatments may be necessary to control weeds regenerating from underground parts or seed. Repeat treatments must be made prior to crop emergence.

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Unless otherwise stated, allow 7 or more days after application before tillage.

Do not treat when weeds are under drought stress as good soil moisture is necessary for active growth.

For hand-held sprayers, prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution

Desired Volume	Amount of Makaze					
	½%	1%	1½%	2%	5%	10%
1 Gal	⅔ oz	1 1/3 oz.	2oz	2 ⅔ oz	6½ oz	13 oz
25 Gal	1 pt	1 qt	1½ qt	2 qt	5 qt	10 qt
100 Gal	2 qt	1 gal	1½ gal	2 gal	5 gal	10 gal

2 tablespoons = 1 fluid ounce

Weed Species	Rate (QT/A)	Water Volume	Hand-Held % Solution	Comments
Alfalfa	1	3-10	2%	Make applications after the last hay cutting in the fall. Allow alfalfa to regrow to a height of 6 to 8 inches or more prior to retreatment. Applications should be followed with deep tillage at least 7 days after treatment, but before soil freeze-up.
Alligatorweed	4	3-20	1.5%	Partial control. Apply when most of the plants are in bloom. Repeat applications will be required to maintain control.
Anise (fennel)	-	-	1-2%	Apply as a spray-to-wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.
Bahiagrass	3-5	3-20	2%	Apply when most plants have reached the early head stage.
Bentgrass	1.5	10-20	2%	For suppression in grass seed production areas. For ground applications only. Ensure entire crown area has resumed growth prior to a fall application. Bentgrass should have at least 3 inches of growth. Tillage prior to treatment should be avoided. Tillage 7 to 10 days after application is recommended for best results.
Bermudagrass	3-5	3-20	2%	For control apply 5 quarts of this product per acre. For partial control, apply 3 quarts per acre. Treat when bermudagrass is actively growing and seedheads are present. Retreatment may be necessary to maintain control.
Bermudagrass, water (knotgrass)	1-1.5	5-10	2%	Apply 1.5 quarts of this product in 5 to 10 gallons of water per acre. Apply when water bermudagrass is 12 to 18 inches in length. Allow 7 or more days before tilling, flushing or flooding the field. Fall applications only: Apply 1 quart of this product in 5 to 10 gallons of water per acre. Fallow fields should be tilled prior to application. Apply prior to frost on water bermudagrass that is 12 to 18 inches in length. This product is not registered in California for use on water bermudagrass.
Bindweed, field	0.5-5	3-20	2%	Do not treat when weeds are under drought stress as good soil moisture is necessary for active growth. For control, apply 4 to 5 quarts of this product per acre west of the Mississippi River and 3 to 4 quarts east of the Mississippi River. Apply when the weeds are at or beyond full bloom. For best results, apply in late summer or fall. Fall treatments must be applied before a killing frost. Also for control, apply 2 quarts of this product plus 0.5 pounds a.i. of Rifle® in 10 to 20 gallons of water per acre. Do not apply by air. For suppression on irrigated agricultural land, apply 1 to 2 quarts of this product plus 1 pound a.i. of 2,4-D in 10 to 20 gallons of water per acre with ground equipment only. Applications should be made following harvest or in fall fallow ground when the bindweed is actively growing and the majority of runners are 12 inches or more in length. The use of at least one irrigation will promote active bindweed growth. For suppression, apply 16 fluid ounces of this product plus 0.5 pound a.i. 2,4-D in 3 to 10 gallons of water per acre for ground applications and 3 to 5 gallons of water per acre for aerial applications. Apply by air in fallow and reduced tillage systems only. Applications should be delayed until maximum emergence has occurred and when vines are between 6 to 18 inches in length. In California only, apply 1 to 5 quarts of this product per acre. Actual rate needed for suppression or control will vary within this range depending on local conditions. For suppression on irrigated land where annual tillage is performed apply 1 quart of this product in 3 to 10 gallons of water per acre. Apply to bindweed that has reached a length of 12 inches or greater. Allow maximum weed emergence and runner growth. Allow 3 or more days after application before tillage.
Bluegrass, Kentucky	1-2	3-40	2%	Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.
Blueweed, Texas	3-5	3-40	2%	Apply 4 to 5 quarts of this product per acre west of the Mississippi River and 3 to 4 quarts per acre east of the Mississippi River. Apply when plants are at or beyond full bloom. New leaf development indicates active growth. For best results, apply in late summer or fall. Fall treatments must be applied before a killing frost.
Brackenfern	3-4	3-40	1-1.5%	Apply to fully expanded fronds which are at least 18 inches long.
Bromegrass, smooth	1-2	3-40	2%	Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.
Bursage, woolly-leaf	-	3-20	2%	For control, apply 2 quarts of this product plus 1 pint of Rifle® per acre. For partial control, apply 1 quart of this product plus 1 pint of Rifle® per acre. Apply when plants are producing new active growth which has been initiated by moisture for at least 2 weeks and when plants are at or beyond flowering.
Canarygrass, reed	2-3	3-40	2%	For best results, apply when most plants have reached the boot-to-head stage of growth.
Cattail	3-5	3-40	2%	Apply when most plants have reached the early head stage.
Clover; red, white	3-5	3-20	2%	Apply when most plants have reached the early bud stage.
Cogongrass	3-5	10-40	2%	Apply when cogongrass is at least 18 inches tall in late summer or fall. Due to uneven stages of growth and the dense nature of vegetation preventing good spray coverage, repeat treatments may be necessary to maintain control.
Dallisgrass	3-5	3-20	2%	Apply when post plants have reached the early head stage.
Dandelion	3-5	3-40	2%	Apply when most plants have reached the early bud stage of growth. Also for control, apply 16 fluid ounces of this product plus 0.5 pound a.i. 2,4-D in 3 to 10 gallons of water per acre.
Dock, curly	3-5	3-40	2%	Apply when most plants have reached the early bud stage of growth. Also for control, apply 16 fluid ounces of this product plus 0.5 pound a.i. 2,4-D in 3 to 10 gallons of water per acre.
Dogbane, hemp	4	3-40	2%	Apply when most plants have reached the late bud to flower stage of growth. Following crop harvest or mowing, allow weeds to regrow to a mature stage prior to treatment. For best results, apply in late summer or fall. For suppression, apply 16 fluid ounces of this product plus 0.5 pound a.i. of 2,4-D in 3 to 10 gallons of water per acre for ground applications and 3 to 5 gallons of water per acre for aerial applications. Delay applications until maximum emergence of dogbane has occurred.
Fescue (except tall)	3-5	3-20	2%	Apply when most plants have reached the early head stage.
Fescue, tall	1-3	3-40	2%	Apply 3 quarts of this product per acre when most plants have reached boot-to-early seedhead stage of development. Fall applications only: Apply 1 quart of this product in 3 to 10 gallons of water per acre. Apply to fescue in the fall when plants have 6 to 12 inches of new growth. A sequential application of 1 pint per acre of this product will improve long-term control and control seedlings germinating after fall treatments or the following spring.
Guineagrass	3	3-40	1%	Apply when most plants have reached at least the 7-leaf stage of growth. Ensure thorough coverage when using hand-held equipment.
Horsenettle	3-5	3-20	2%	Apply when most plants have reached the early bud stage.
Horseradish	4	3-40	2%	Apply when most plants have reached the late bud to flower stage of growth. For best results, apply in late summer or fall.
Iceplant	-	-	1.5-2%	Iceplant should be at or beyond the early stage of bud growth. Thorough coverage is necessary for best control.

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Weed Species	Rate (QT/A)	Water Volume	Hand-Held % Solution	Comments
Jerusalem artichoke	3-5	3-20	2%	Apply when most plants are in the early bud stage.
Johnsongrass	0.5-3	3-40	2%	In annual cropping systems apply 1 to 2 quarts of this product per acre. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre. In noncrop, or areas where annual tillage (no-till) is not practiced, apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre. For best results, apply when most plants have reached the boot-to-head stage of growth or in the fall prior to frost. Allow 7 or more days after application before tillage. Do not tank mix with residual herbicides when using the 1 quart per acre rate. For burndown of Johnsongrass, apply 1 pint of this product in 3 to 10 gallons of water per acre before the plants reach a height of 12 inches. For this use, allow at least 3 days after treatment before tillage. Spot treatment (partial control or suppression) – Apply a 1 percent solution of this product when Johnsongrass is 12 to 18 inches in height. Coverage should be uniform and complete.
Kikuyugrass	2-3	3-40	2%	Spray when most Kikuyugrass is at least 8 inches in height (3 or 4-leaf stage of growth). Allow 3 or more days after application before tillage.
Knapweed	4	3-40	2%	Apply when most plants have reached the late bud to flower stage of growth. For best results, apply in late summer or fall.
Lantana	-	-	1-1.25%	Apply at or beyond the bloom stage of growth. Use the higher application rate for plants that have reached the woody stage of growth.
Lespedeza	3-5	3-20	2%	Apply when most plants have reached the early bud stage.
Milkweed, common	3	3-40	2%	Apply when most plants have reached the late bud to flower stage of growth.
Muhly, wirestem	1-2	3-40	2%	Use 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre of in pasture, sod, or non crop areas. Spray when the wirestem muhly is 8 inches or more in height. Do not till between harvest and fall applications or in the fall or spring prior to spring applications. Allow 3 or more days after application before tillage.
Mullein, common	3-5	3-20	2%	Apply when most plants are in the early bud stage.
Napiergrass	3-5	3-20	2%	Apply when most plants are in the early head stage.
Nightshade, silverleaf	2	3-10	2%	Applications should be made when at least 60 percent of the plants have berries. Fall treatments must be applied before a killing frost.
Nutsedge; purple, yellow	0.5-3	3-40	1-2%	Apply 3 quarts of this product per acre or apply a 1 to 2 percent solution for control of nutsedge plants and immature nutlets attached to treated plants. Treat when plants are in flower or when new nutlets can be found at rhizome tips. Nutlets which have not germinated will not be controlled and may germinate following treatment. Repeat treatments will be required for long-term control of ungerminated tubers. Sequential applications: 1 to 2 quarts of this product in 3 to 10 gallons of water per acre will also provide control. Make applications when a majority of the plants are in the 3 to 5-leaf stage (less than 6 inches tall). Repeat this application, as necessary, when newly emerging plants reach the 3 to 5-leaf stage. Subsequent applications will be necessary for long-term control. For partial control of existing plants, apply 1 pint to 2 quarts of this product in 3 to 40 gallons of water per acre. Treat when plants have 3 to 5 leaves and most are less than 6 inches tall. Repeat treatments will be required to control subsequent emerging plants or regrowth of existing plants.
Orchardgrass	1-2	3-40	2%	Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height. Orchardgrass sods going to no-till corn: Apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to orchardgrass that is a minimum of 12 inches tall for spring applications and 6 inches tall for fall applications. Allow at least 3 days following application before planting. A sequential application of atrazine will be necessary for optimum results.
Pampasgrass	-	-	1.5–2%	Pampasgrass should be at or beyond the boot stage of growth. Thorough coverage is necessary for best control.
Paragrass	3-5	3-20	2%	Apply when most plants are in the early head stage.
Phragmites	3-5	10-40	1-2%	For partial control. For best results, treat during late summer or fall months or when plants are actively growing and in full bloom. Treatment before or after this stage may lead to reduced control. Due to the dense nature of the vegetation, which may prevent good spray coverage or uneven stages of growth, repeat treatments may be necessary to maintain control. Visual control symptoms will be slow to develop.
Poison hemlock	-	-	1-2%	Apply as a spray-to-wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.
Quackgrass	1-3	3-40	2%	In annual cropping systems, or in pastures and sods followed by deep tillage: Apply 1 quart of this product in 3 to 10 gallons of water per acre. For 10 to 40 gallons of water per acre, apply 2 quarts of this product. Do not tank mix with residual herbicides when using the 1 quart rate. Spray when quackgrass is 6 to 8 inches in height. Do not till between harvest and fall applications or in fall or spring prior to spring application. Allow 3 or more days after application before tillage. In pastures or sods, use a moldboard plow for best results. In pastures, sods or noncrop areas where deep tillage does not follow application: Apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre when the quackgrass is greater than 8 inches tall.
Redvine	0.75-2	5-10	2%	For suppression, apply 24 fluid ounces of this product per acre at each of two applications 7 to 14 days apart or a single application of 2 quarts per acre. Apply specified rates in 5 to 10 gallons of water per acre. Apply in late September or early October to plants which are at least 18 inches tall and have been growing 45 to 60 days since the last tillage operation. Make applications at least 1 week before a killing frost.
Reed, giant	-	-	2%	Best results are obtained when applications are made in late summer to fall.
Ryegrass, perennial	1-3	3-40	2%	In annual cropping systems apply 1 to 2 quarts of this product per acre. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre. In noncrop, or areas where annual tillage (no-till) is not practiced, apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre. For best results, apply when most plants have reached the boot-to-head stage of growth or in the fall prior to frost. Do not tank-mix with residual herbicides when using the 1 quart per acre rate.
Smartweed, swamp	3-5	3-40	2%	Apply when most plants have reached the early bud stage of growth. Also for control, apply 16 fluid ounces of this product plus 0.5 pound a.i. 2,4-D in 3 to 10 gallons of water per acre in the late summer or fall.
Spurge, leafy	-	3-10	2%	For suppression, apply 16 fluid ounces of this product plus 0.5 pound a.i. 2,4-D in 3 to 10 gallons of water per acre in the late summer or fall. If mowing has occurred prior to treatment, apply when most of the plants are 12 inches tall.
Starthistle, yellow	2	10-40	2%	Best results are obtained when applications are made during the rosette, bolting and early flower stages.
Sweet potato, wild	-	-	2%	Partial control. Apply to plants that are at or beyond the bloom stage of growth. Repeat applications may be required.
Thistle, artichoke	-	-	2%	Partial control. Apply to plants that are at or beyond the bloom stage of growth. Repeat applications may be required.
Thistle, Canada	2-3	3-40	2%	Apply when most plants are at or beyond the bud stages of growth. After harvest, mowing or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to the application of this product. Fall treatments must be applied before a killing frost. Allow 3 or more days after application before tillage. For suppression, apply 1 quart of this product or 1 pint of this product plus 0.5 pound a.i. 2,4-D, in 3 to 10 gallons of water

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Weed Species	Rate (QT/A)	Water Volume	Hand-Held % Solution	Comments
Thistle, Canada cont'd.:	2-3	3-40	2%	per acre in the late summer or fall after harvest, mowing or tillage. Allow rosette regrowth to a minimum of 6 inches in diameter before treating. Applications can be made as long as leaves are still green and plants are actively growing at the time of application. Allow 3 or more days after application before tillage.
Timothy	2-3	3-40	2%	For best results, apply when most plants have reached the boot-to-head stage of growth.
Torpedograss	4-5	3-40	2%	For partial control. Apply when most plants are at or beyond the seedhead stage of growth. Repeat applications will be required to maintain control. Fall treatments must be applied before frost.
Trumpetcreeper	2	5-10	2%	Partial control. Apply in late September or October, to plants which are at least 18 inches tall and have been growing 45-60 days since the last tillage operation. Make applications at least 1 week before a killing frost.
Vaseygrass	3-5	3-20	2%	Apply when most plants are in the early head stage.
Velvetgrass	3-5	3-20	2%	Apply when most plants are in the early head stage.
Wheatgrass, western	2-3	3-40	2%	For best results, apply when most plants have reached the boot-to-head stage of growth.

WOODY BRUSH AND TREES RATE TABLE ALPHABETICALLY BY SPECIES

Apply this product after full leaf expansion, unless otherwise directed. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at a high moisture content and are flowering.

Ensure thorough coverage when using hand-held equipment. Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

Weed Species	Rate (QT/A)	Water Volume	Hand-Held % Solution	Comments
Alder	3-4	3-40	1-1.5%	For control
Ash	2-5	3-40	1-2%	Partial control
Aspen, quaking	2-3	3-40	1-1.5%	For control
Bearmat (Bearclover)	2-5	3-40	1-2%	Partial control
Beech	2-5	3-40	1-2%	Partial control
Birch	2	3-40	1%	For control
Blackberry	3-4	10-40	1-1.5%	For control. Make applications after plants have reached full leaf maturity. Best results are obtained when applications are made in late summer or fall. Applications may also be made after leaf drop and until a killing frost or as long as stems are green. After berries have set or dropped in late fall, blackberry can be controlled by applying a ¾ percent solution of this product. For control of blackberries after leaf drop and until a killing frost or as long as stems are green, apply 3 to 4 quarts of this product in 10 to 40 gallons of water per acre.
Blackgum	2-5	3-40	1-2%	For control
Bracken	2-5	3-40	1-2%	For control
Broom; French, Scotch	-	-	1.5-2%	For control
Buckwheat, California	-	-	1-2%	For partial control. Thorough coverage of foliage is necessary for best results.
Cascara	2-5	3-40	1-2%	Partial control
Catsclaw	-	-	1-1.5%	Partial control
Ceanothus	2-5	3-40	1-2%	Partial control
Chamise	-	-	1%	For control. Thorough coverage of foliage is necessary for best results.
Cherry; bitter, black pin	2-3	3-40	1-1.5%	For control
Coyote brush	-	-	1.5-2%	For control. Apply when at least 50 percent of the new leaves are fully developed.
Dogwood	2-5	3-40	1-2%	Partial control
Elderberry	2	3-40	1%	For control
Elm	2-5	3-40	1-2%	Partial control
Eucalyptus	-	-	2%	For control of eucalyptus resprouts, apply when resprouts are 6 to 12 feet tall. Ensure complete coverage. Avoid application to drought-stressed plants.
Florida holly (Brazilian Peppertree)	2-5	3-40	1-2%	Partial control
Gorse	2-5	3-40	1-2%	Partial control
Hasardia	-	-	1-2%	Partial control. Thorough coverage of foliage is necessary for best results.
Hawthorn	2-3	3-40	1-1.5%	For control
Hazel	2	3-40	1%	For control
Hickory	2-5	3-40	1-2%	Partial control
Honeysuckle	3-4	3-40	1-1.5%	For control
Hornbeam, American	2-5	3-40	1-2%	Partial control
Kudzu	4	3-40	2%	For control. Repeat applications may be required to maintain control.
Locust, black	2-4	3-40	1-2%	Partial control
Madrone resprouts	-	-	2%	Partial control. Apply to resprouts that are 3 to 6 feet tall. Best results are obtained with spring/early summer treatments.
Manzanita	2-5	3-40	1-2%	Partial control
Maple, red	2-4	3-40	1-1.5%	For control, apply a 1 to 1.5 percent solution when at least 50 percent of the new leaves are fully developed. For partial control, apply 2 to 4 quarts of this product per acre.
Maple, sugar	-	-	1-1.5%	For control. Apply when at least 50 percent of the new leaves are fully developed.
Monkey flower	-	-	1-2%	Partial control. Thorough coverage of foliage is necessary for best results.
Oak; black, white	2-4	3-40	1-2%	Partial control
Oak, post	3-4	3-40	1-1.5%	For control
Oak; northern, pin	-	-	1-1.5%	For control. Apply when at least 50 percent of the new leaves are fully developed.
Oak; southern, red	2-3	3-40	1-1.5%	For control
Persimmon	2-5	3-40	1-2%	Partial control
Pine	2-5	3-40	1-2%	For control
Poison ivy/ Poison oak	4-5	3-40	2%	For control. Repeat applications may be required to maintain control. Fall treatments must be applied before leaves lose green color.
Poplar, yellow	2-5	3-40	2%	Partial control
Redbud, eastern	2-5	3-40	1-2%	For control
Rose, multiflora	2	3-40	1%	For control. Treatments should be made prior to leaf deterioration by leaf-eating insects.
Russian olive	2-5	3-40	1-2%	Partial control
Sage, black	-	-	1%	For control. Thorough coverage of foliage is necessary for best results.
Sage, white	2-5	3-40	1-2%	Partial control
Sage brush, California	-	-	1%	For control. Thorough coverage of foliage is necessary for best results.
Salmonberry	2	3-40	1%	For control
Salt-cedar	2-5	3-40	1-2%	For control
Sassafras	2-5	3-40	1-2%	Partial control
Sourwood	2-5	3-40	1-2%	Partial control
Sumac; poison, smooth, winged	2-4	3-40	1-2%	Partial control
Sweetgum	2-3	3-40	1-1.5%	For control
Swordfern	2-5	3-40	1-2%	Partial control
Tallowtree, Chinese	-	-	1%	For control. Thorough coverage of foliage is necessary for best results.
Tan oak resprouts	-	-	2%	For partial control. Apply to resprouts that are less than 3 to 6 feet tall. Best results are obtained with fall applications.
Thimbleberry	2	3-40	1%	For control
Tobacco, tree	-	-	1-2%	Partial control
Trumpetcreeper	2-3	3-40	1-1.5%	For control
Vine maple	2-5	3-40	1-2%	Partial control
Virginia creeper	2-5	3-40	1-2%	For control
Waxmyrtle, southern	2-5	3-40	1-2%	Partial control
Willow	3	3-40	1%	For control

NONCROP USES

See "GENERAL INFORMATION" and "MIXING, ADDITIVES and APPLICATION INSTRUCTIONS" sections of this label for essential product performance information and the following "NONCROP" sections for specific uses.

EXTREME CARE MUST BE EXERCISED TO AVOID CONTACT OF SPRAY WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE TURFGRASSES, TREES, SHRUBS OR OTHER DESIRABLE VEGETATION SINCE SEVERE DAMAGE OR DESTRUCTION MAY RESULT.

Repeat treatments may be necessary to control weeds regenerating from underground parts or seeds.

Do not exceed 10.6 quarts of this product per acre per year.

This product does not provide residual weed control. For subsequent weed control, follow a label-approved herbicide program.

Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used.

INDUSTRIAL, RECREATIONAL AND PUBLIC AREAS

When applied as directed for "NONCROP USES", under conditions described, this product controls annual and perennial weeds listed on this label growing in areas such as airports, ditch banks, dry ditches, dry canals, fencerows, golf courses, highways, industrial plant sites, lumber yards, manufacturing sites, office complexes, parking areas, parks, petroleum tank farms and pumping installations, pipelines, power and telephone rights-of-way, railroads, roadsides, schools, storage areas, utility substations, and warehouse areas.

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For specific rates of application and instructions for control of various annual and perennial weeds and woody brush and trees, see the "WEEDS CONTROLLED" section of this label.

This product may be applied with recirculating sprayers, shielded applicators, or wiper applicators in any noncrop site specified on this label. See the Selective Equipment part of "APPLICATION EQUIPMENT and TECHNIQUES" section of this label for information on proper use and calibration of this equipment.

Chemical mowing - Perennials
This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 8 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass or quackgrass covers. Use 6 fluid ounces of this product per acre when treating Kentucky bluegrass. Apply treatments in 10 to 40 gallons of spray solution per acre.

Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Chemical mowing - Annuals
For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 4 to 5 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments may cause injury to the desired grasses.

RAILROADS
Bare ground. Ballast and Shoulders, Crossings, and Spot Treatment
This product may be used to maintain bare ground on railroad ballast and shoulders. Repeat applications of this product may be used, as weeds emerge, to maintain bare ground. This product may be used to control tall-growing weeds to improve line-of-sight at railroad crossings and reduce the need for mowing along rights-of-way, wayside structures, and other similar areas. For crossing applications, up to 80 gallons of spray solution per acre may be used. This product may be tank mixed with the following products for ballast, shoulder, spot, bare ground crossing treatments:

ARSENAL®	GARLON® 4	SAHARA®
DICAMBA	HYVAR® X	SPIKE®
DIURON	KROVAR® I DF	TELAR®
ESCORT®	OUST®	VANQUISH®
GARLON® 3A		2,4-D

Brush control
This product may be used to control woody brush and trees on railroad rights-of-way. Apply 4 to 10 quarts of this product per acre as a broadcast spray, using boom-type or boom-less nozzles. Up to 80 gallons of spray solutions per acre may be used. Apply a 3/4 to 2 percent solution of this product when using high-volume spray-to-wet applications. Apply a 5 to 10 percent solution of this product when using low volume directed sprays for spot treatment. This product may be mixed with the following products for enhanced control of woody brush and trees:

ARSENAL®	GARLON® 3A	GARLON® 4
ESCORT®	TORDON® K	

Bermudagrass release
This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing bermudagrass. Apply 1 to 3 pints of this product in up to 80 gallons of spray solutions per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 3 pints of this product with 1 to 2 ounces of Oust per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

Bahiagrass	Dewberry	Poorjoe
Blackberry	Dock, Curly	Raspberry
Bluestem, silver	Dog Fennel	Trumpetcreeper
Broomsedge	Fescue, tall	Vaseygrass
Dallisgrass	Johnsongrass	Vervain, blue

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Repeat applications in the same season are not recommended, since severe injury may occur.

ROADSIDES
Shoulder treatments
This product may be used on road shoulders. It may be applied with boom sprayers, shielded boom sprayers, high-volume off-center nozzles, handheld equipment, and similar equipment.

Guardrails and other obstacles to mowing
This product may be used to control weeds growing under guardrails and around signposts and other objects along the roadside.

Spot teatment
This product may be used as a spot treatment to control unwanted vegetation growing along roadsides.

Tank mixtures
This product may be tank-mixed with the following products for shoulder, guardrail, spot and bare ground treatments:

DICAMBA	OUST®	SAHARA®
DIURON	PENDULUM® 3.3 EC	SIMAZINE
ENDURANCE®	PENDULUM® WDG	SURFLAN®
ESCORT®	PRINCEP® DF	TELAR®
IMAZAPYR	PRINCEP® LIQUID	VANQUISH®
KROVAR® I DF	RONSTAR® 50 WP	2,4-D

See the "GENERAL NONCROP AREAS AND INDUSTRIAL SITES" section of this label for general instructions for tank mixing.

Release of Bermudagrass or Bahiagrass
Dormant applications
This product may be used to control or partially control many winter annual weeds and tall fescue for effective release of dormant bermudagrass or bahiagrass. Treat only when turf is dormant and prior to spring greenup. This product may also be tank-mixed with Oust for residual control. Tank mixtures of this product with Oust may delay greenup.

For best results on winter annuals, treat when plants are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is at or beyond the 4- to 6-leaf stage.

Apply 8 to 64 fluid ounces of this product per acre alone or in a tank mixture with ¼ to 1 ounce per acre of Oust. Apply the specified rates in 10 to 40 gallons of water per acre. Use only in areas where bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated. To avoid delays in greenup and minimize injury, add no more than 1 ounce of Oust per acre on bermudagrass and no more than 0.5 ounce of Oust per acre on bahiagrass and avoid treatments when these grasses are in semi-dormant condition.

Actively growing bermudagrass
This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing bermudagrass. Apply 1 to 3 pints of this product in 10 to 40 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 2 pints of this product with 1 to 2 ounces of Oust per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

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

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions.Repeat applications of the tank mix in the same season are not recommended, since severe injury may occur.

Actively growing bahiagrass
For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 6 fluid ounces of this product in 10 to 40 gallons of water per acre. Apply 1 to 2 weeks after full greenup or after mowing to a uniform height of 3 to 4 inches. This application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 4 fluid ounces of this product per acre, followed by and application of 2 to 4 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

TANK MIXTURES FOR INDUSTRIAL SITES AND FORESTRY SITE PREPARATIONS

Makaze Herbicide plus OUST
Use on industrial sites including airports, industrial plants, lumberyards, petroleum tank farms, pumping stations, railroads, roadsides, storage areas, warehouse areas and forestry sites.

This tank mixture may also be used as a site preparation treatment for sites to be planted to jack pine, loblolly pine, red pine, slash pine and Virginia pine. When applied as directed for "NONCROP USES" under the conditions described, this product plus Oust provides control of annual weeds listed in the "WEEDS CONTROLLED" section of the label for this product and Oust, and control or partial control of the perennial weeds listed below.

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Apply 1 to 2 quarts of this product with 2 to 4 ounces of Oust in 10 to 40 gallons of spray solution per acre as a broadcast spray to actively growing weeds.

This mixture may be applied by aerial equipment in site prep operations. When applied by air, use the specified rates in 5 to 15 gallons of spray solution per acre.

This product plus Oust tank mixtures may not be applied by air in California.

For control of annual weeds, use the lower rates of these products.

For control of the listed perennial weeds, use the higher rates of both products. For partial control, use the lower rates.

Bahiagrass
Paspalum notatum
Bermudagrass*
Cynodon dactylon
Broomsedge
Andropogon virginicus
Dock, curly
Rumex crispus
Dogfennel
Eupatorium capilliforium
Fescue, tall
Festuca arundinacea
Johnsongrass**
Sorghum halepense
Poorjoe**
Diodia teres
Quackgrass
Agropyron repens
Trumpetcreeper*
Campsis radicans
Vaseygrass
Paspalum urvillei
Vervain, blue
Verbena hastata

*Suppression at the higher rates only.
**Control at the lower rates.

Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used.

TANK MIXTURES NONCROP SITES

When applied as a tank mixture, this product provides control of the emerged annual weeds and partial control of the emerged perennial weeds listed in this label. When applied as a tank mixture, the following residual herbicides will provide preemergence control of the weeds listed in the individual product labels.

Makaze plus DIURON
Makaze plus KROVAR I
Makaze plus RONSTAR® 50WSP
Makaze plus SIMAZINE
Makaze plusPRINCEP CALIBER 90
Makaze plus SURFLAN DF
Makaze plus SURFLAN AS

When tank mixing with residual herbicides, see the "MIXING, ADDITIVES and APPLICATION INSTRUCTIONS" section of this label before preparing these tank mixtures. Read and carefully observe the label claims, cautionary statements, use rates and all other information on the labels of all products used in these tank mixtures. Use according to the most restrictive label directions for each product in the mixture.

CONTROL OF EMERGED WEEDS
Note: For backpack sprayer and handgun applications, see the "HAND-HELD AND HIGH VOLUME EQUIPMENT" section for rates.

Annual Weeds – Apply 1 quart per acre of this product in these tank mixtures when weeds are less than 6 inches tall and 1.5 quarts per acre when weeds are more than 6 inches tall.

Perennial Weeds – For partial control of perennial weeds using these tank mixtures, apply 2 to 5 quarts per acre of this product. Follow the recommendations in the "WEEDS CONTROLLED" section of this label for stage of growth and rate of application for specific perennial weeds.

PREEMERGENCE WEED CONTROL
For preemergence weed control, refer to the individual product labels for specific noncrop sites, rates, carrier volumes and precautionary statements.

Mix only the quantity of spray solution which can be used during the same day. Do not allow these tank mixtures to stand overnight as this may result in reduced weed control.

FARMSTEAD WEED CONTROL

When applied as directed for "NONCROP USES", under conditions described, this product controls undesirable vegetation listed on this label around farmstead building foundations, along and in fences, shelterbelts and for general nonselective farmstead weed control.

For specific rates of application and instructions for control of various annual and perennial weeds, see the "WEEDS CONTROLLED" section of this label.

FARM DITCHES
This product will suppress perennial grasses along farm ditches. Apply this product at a rate of 6 to 8 fluid ounces per acre. Use 8 fluid ounces per acre when treating tall (coarse) fescue, fine fescue, orchardgrass or quackgrass covers. For best suppression of these species, add ammonium sulfate at a rate of 1.7 pounds per 10 gallons of spray solution. Use 6 fluid ounces per acre without ammonium sulfate when treating Kentucky bluegrass.

Apply treatments in 10 to 20 gallons of spray solution per acre to actively growing perennial grass covers. For best spray distribution and coverage, use flat fan nozzles.

Where broadleaf weed control or suppression is desired, tank mix this product with an appropriate, labeled broadleaf weed herbicide.

CONSERVATION RESERVE PROGRAM (CRP ACRES)

This product can be used to control undesirable vegetation when rotating out of CRP acres or to suppress competitive growth and seed production of undesirable vegetation in CRP acres.

For specific rates of application for various annual and perennial weeds, see the "WEEDS CONTROLLED" section of this label.

CRP applications may be made with wiper applicators or conventional spray equipment.

For selective applications with broadcast spray equipment, apply 12 to 16 ounces per acre of this product in early spring before desirable CRP grasses, such as crested and tall wheatgrass, break dormancy and initiate green growth. Late fall applications can be made after desirable perennial grasses have reached dormancy. Some stunting of CRP perennial grasses will occur if applications are made when plants are not dormant.

DORMANT RANGELAND

This product will control or suppress many weeds, including downy brome, cheat grass, cereal rye, medusahead rye and jointed goatgrass in dormant rangeland.

Apply 8 to 16 ounces per acre of this product in the early spring when the weeds have greened up, but desirable grasses, such as crested and tall wheatgrass are still truly dormant.

Slight discoloration of the desirable grasses may occur, but they will regreen and regrow under moist soil conditions as effects of this product wear off.

Do not use additional surfactant or ammonium sulfate when spraying dormant rangeland grasses with Makaze.

HABITAT MANAGEMENT

This product may be used for the restoration and/or maintenance of native habitats and in wildlife management areas. Apply as directed in the "NONCROP USES" section of this label.

Habitat Restoration and Maintenance – When applied as directed, exotic and other undesirable vegetation may be controlled in habitat management areas. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad spectrum vegetation control requirements in habitat management areas. Spot treatments can be made to selectively remove unwanted plants for habitat maintenance and enhancement. For spot treatments, care should be exercised to keep spray off of desirable plants.

Wildlife Food Plots – This product may be used as a site preparation treatment 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 7 days after applying this product before tilling.

ORNAMENTALS, NURSERIES (PLANTS AND TREES) AND CHRISTMAS TREES

THIS PRODUCT IS NOT RECOMMENDED FOR USE AS AN OVER-THE-TOP BROADCAST SPRAY IN ORNAMENTALS AND CHRISTMAS TREES.

Note: Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material.

When applied as instructed for the conditions described for "NONCROP USES", this product controls undesirable vegetation listed on this label prior to planting, within and around greenhouses and shadehouses, and as a postdirected spray around established ornamentals and Christmas trees. This product may also be used to trim and edge around trees, buildings, sidewalks, roads, potted plants and other objects in a nursery setting.

For specific rates of application and instructions for control of various annual and perennial weeds, see the "WEEDS CONTROLLED" section of this label.

Where repeat applications are necessary, do not exceed 10.6 quarts of this product per acre per year.

Site Preparation – Following preplant applications of this product, any ornamental, nursery species or Christmas tree species may be planted. Precautions should be taken to protect nontarget plants during site preparation applications.

Greenhouse/Shadehouse Use – This product may be used to control weeds listed on this label which are growing in greenhouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

Postdirected Spray – Use as a postdirected spray around established woody ornamental species, nursery species or Christmas trees such as those listed below. Care must be exercised to avoid contact of spray, drift or mist with foliage of or green bark of established ornamental species.

Arborvitae
Thuja spp.
Azalea
Rhododendron spp.
Boxwood
Buxus spp.
Crabapple
Malus spp.
Euonymus
Euonymus spp.
Fir
Abies spp.
Pseudotsuga spp.
Hollies
Ilex spp.
Jojoba
Simmondsia chinensis
Lilac
Syringa spp.
Magnolia
Magnolia spp.
Maple
Acer spp.
Oak
Quercus spp.
Pine
Pinus spp.
Privet
Ligustrum spp.
Spruce
Picea spp.
Yew
Taxus spp.

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SILVICULTURAL SITES and RIGHTS-OF-WAY

NOTE: NOT RECOMMENDED FOR USE AS AN OVER-THE-TOP BROADCAST SPRAY IN SILVICULTURAL NURSERIES

When applied as directed for "NONCROP USES" under conditions described, this product controls undesirable vegetation listed on this label. This product also suppresses or controls undesirable vegetation listed on this label when applied at specified rates for release of established coniferous species listed on this label.

For specific rates of application and instructions for control of various brush, annual and perennial weeds, see the "WEEDS CONTROLLED" section of this label. For specific rates of application for release of listed coniferous species, see the "CONIFER RELEASE" part of this section of the label.

Do not exceed 10.6 quarts of this product per acre per year.

Aerial Application – This product may be applied using aerial spray equipment for silvicultural site preparation, conifer release and rights-of-way treatments. See the "APPLICATION EQUIPMENT and TECHNIQUES" part of the "MIXING, ADDITIVES and APPLICATION INSTRUCTIONS" section of this label for information on how to apply this product by air.

DO NOT APPLY THIS PRODUCT BY AIR TO RIGHTS-OF-WAY SITES IN THE STATE OF CALIFORNIA.

SITE PREPARATION
Following preplant applications of this product, any silvicultural species may be planted.

POSTDIRECTED SPRAY
In established silvicultural sites, use as a spray on the foliage of undesirable vegetation. Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of desirable species.

CONIFER RELEASE
For release, apply at the end of the first growing season, except in California. Vegetation should not be disturbed prior to treatment or until visual symptoms appear after treatment. Symptoms of treatment are slow to appear, especially in woody species treated in late fall. Injury may occur to conifers treated for release, especially where spray patterns overlap or the higher rates are applied or when applications are made during periods of active conifer growth. **Do not use additional surfactant with conifer release applications.**

Applications must be made after formation of final conifer resting buds in the fall or prior to initial bud swelling in spring. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Use the following rates for conifer release to control or partially control the weeds listed in the "WEEDS CONTROLLED" section of this label.
For release of the following conifer species:

Douglas fir	**Hemlock**	**Spruce**
Pseudotsuga menziesii	*Tsuga* spp.	*Picea* spp.
Fir	**Pines***	
Abies spp.	*Pinus* spp.	

*Includes all species except eastern white pine, loblolly pine or slash pine.

Apply 1.5 to 2 quarts of this product per acre except in Washington and Oregon, west of the crest of the Cascade Mountains. For spring treatments west of the crest of the Cascade Mountains, apply 1 quart of this product per acre before conifer bud swell for control of annual weeds. For fall treatments in Washington and Oregon, west of the crest of the Cascade Mountains, apply 1 to 1.5 quarts of this product per acre before any major leaf drop of deciduous species.

For release of western hemlock, apply 1 quart of this product per acre.

For release of the following conifer species:

Loblolly pine	**Eastern white pine**	**Slash pine**
Pinus Taeda	*Pinus strobus*	*Pinus elliotti*

Late Season Application – Apply 1.5 to 2 quarts of this product in a minimum of 5 gallons of spray solution per acre during early autumn. Applications made prior to September 1 or when conditions are conducive to rapid growth of conifers will create the potential for increased injury in the form of tip and/or needle burn. Injury may decrease with later applications. Some autumn colors are acceptable at time of application. Apply prior to frost or leaf drop of undesirable plants. Applications made according to label directions will release loblolly pine, eastern white pine and slash pine by reducing competition from the following species:

Ash	**Maple, red**	**Poplar, yellow**
Fraxinus spp.	*Acer rubra*	*Liriodendron tulipfera*
Cherry:	**Oak:**	**Sassafras**
Black	**Black**	*Sassafras albidum*
Prunus serotina	*Quercus velutina*	**Sourwood**
Pin	**Post**	*Oxydendrum arboreum*
Prunus pensylvanica	*Quercus stellata*	**Sumac:**
Elm	**Southern Red**	**Poison**
Ulmus spp.	*Quercus falcata*	*Rhus vernix*
Hawthorn	**White**	**Smooth**
Crataegus spp.	*Quercus alba*	*Rhus glabra*
Locust, black	**Persimmon**	**Winged**
Robina pseudoacacia	*Diospyros* spp.	*Rhus copallina*
		Sweetgum
		Liquidambar styraciflua

Apply only to those sites where woody brush and trees listed in this level constitute the majority of the undesirable species.

MAKAZE PLUS OUST TANK MIXTURES FOR CONIFER RELEASE FROM HERBACEOUS WEEDS

To release loblolly pines from herbaceous weeds, tank mixtures of this product with Oust will provide control of annual weeds listed in the "WEEDS CONTROLLED" section of this and the Oust label, and partial control of the perennial weeds listed below.

Apply 16 to 24 fluid ounces of this product with 2 to 4 ounces of Oust in 10 to 30 gallons of spray solution per acre. Make application to actively growing weeds as a broadcast spray over the top of the young loblolly pines.

This product plus Oust tank mixtures may not be applied by air in California.

This tank mixture may be applied using aerial equipment. When applying by air, use the specified rate in 5 to 15 gallons of spray solution per acre.

For control of annual weeds below 12 inches in height (or runner length on annual vines), use the lower rates of both products. Use the higher rates of both products when annual weeds are in more advanced stages of growth and approaching flower or seed formation.

Use the higher rates of both products for partial control of the following perennial weeds. Use the lower rates for suppression of growth.

Bahiagrass	**Dogfennel**	**Poorjoe***
Paspalum notatum	*Eupatorium capilliforium*	*Diodia teres*
Broomsedge	**Fescue, tall**	**Trumpetcreeper****
Andropogon virginicus	*Festuca arundinacea*	*Campsis radicans*
Dock, curly	**Johnsongrass***	**Vaseygrass**
Rumex crispus	*Sorghum halepense*	*Paspalum urvillei*
		Vervain, blue
		Verbena hastate

*Control at the higher rates.
**Suppression at the higher rates only.

Pine damage may occur or can be accentuated if treatment takes place when young trees are under stress from drought, flood water, insects or disease.

Read and observe the cautionary statements and all other information appearing on the labels of all herbicides used.

NOTE TO USER:
This product must not be used in areas where adverse impact on federally designated endangered/threatened plant or aquatic species is likely.

Prior to making applications, the user of this product must determine that no such species are located in or immediately adjacent to the area to be treated.

CUT STUMP TREATMENTS
Woody vegetation may be controlled by treating freshly cut stumps of trees and resprouts with this product. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut vegetation close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

When used according to directions for cut stump application, this product will CONTROL, PARTIALLY CONTROL or SUPPRESS many types of woody brush and tree species, some of which are listed below:

Alder	**Oak**	**Sweetgum**
Alnus spp.	*Quercus* spp.	*Liquidambar styraciflua*
Eucalyptus	**Reed, giant**	**Tan Oak**
Eucalyptus spp.	*Arundo donax*	*Lithocarpus densiflorus*
Madrone	**Saltcedar**	**Willow**
Arbutus menziesii	*Tamarisk* spp.	*Salix* spp.

INJECTION AND FRILL APPLICATIONS

Woody vegetation may be controlled by injection or frill application of this product. Apply this product using suitable equipment which must penetrate into the living tissue. Apply the equivalent of 1 ml of this product per each 2 to 3 inches of trunk diameter (DBH). This is best achieved by applying a 50 to 100 percent concentration of this material either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying diluted material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frill or cut areas in species that exude sap freely after frills or cutting. In species such as this, make frill or cut at an oblique angle so as to produce a cupping effect and use undiluted material. For best results, application should be made during periods of active growth and after full leaf expansion.

This treatment WILL CONTROL the following woody species:

Oak	**Sweetgum**
Quercus spp.	*Liquidambar styraciflua*
Poplar	**Sycamore**
Populus spp.	*Platanus occidentalis*

This treatment WILL SUPPRESS the following woody species:

Black gum	**Hickory**
Nyssa sylvatica	*Carya* spp.
Dogwood	**Maple, red**
Cornus spp.	*Acer rubrum*

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TURFGRASSES AND GRASSES FOR SEED PRODUCTION

PREPLANT AND RENOVATION

When applied as directed for "NONCROP USES", under conditions described, this product controls most existing vegetation prior to the planting or renovation of either turfgrasses or grass seed production areas.

For specific rates of application and instructions for control of various annual and perennial weeds, and woody brush and trees, see the "WEEDS CONTROLLED" section of this label.

For maximum control of existing vegetation, delay planting to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses, such as bermudagrass, summer or fall applications provide best control.

DO NOT DISTURB SOIL OR UNDERGROUND PLANT PARTS BEFORE TREATMENT. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow proper translocation into underground plant parts.

TURFGRASSES

Where existing vegetation is growing in a field or unmowed situation, apply this product to actively growing weeds at the stages of growth listed in the "WEEDS CONTROLLED" section of this label.

Where existing vegetation is growing under mowed turfgrass management in such sites as apartment complexes, residential areas and sod farms, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Desirable turfgrasses may be planted following the above procedures.

GRASSES FOR SEED PRODUCTION

Apply this product to actively growing weeds at the stages of growth in the "WEEDS CONTROLLED" section of this label prior to planting or renovation of turf or forage grass areas grown for seed production.

DO NOT feed or graze treated areas within 8 weeks after application.

ANNUAL WEED CONTROL IN DORMANT BERMUDAGRASS AND BAHIAGRASS TURF

When applied as directed for "NONCROP USES" under the conditions described, this product will provide control or suppression of many winter annual weeds and tall fescue for effective release of dormant bermudagrass and bahiagrass turf. Refer to the rate table for Makaze alone under the "RELEASE OF BERMUDAGRASS and BAHIAGRASS" section of this label for specified rates and volumes on the species to be suppressed or controlled. Treat only when turf is dormant and prior to spring greenup. Spot treatments or broadcast applications of this product in excess of 16 fluid ounces per acre may result in injury or delayed greenup in highly maintained turfgrass areas; i.e., golf courses, lawns, etc. DO NOT APPLY TANK MIXTURES of this product plus Oust in highly maintained turfgrass areas.

RELEASE OF BERMUDAGRASS OR BAHIAGRASS

NOTE: Use only in areas where bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated. Use tank mixtures of this product plus Oust only on railroads, highways, utility plant sites, or other right-of-way areas.

When applied as directed for "NONCROP USES" under the conditions described, this product will provide control or suppression of many winter annual weeds and tall fescue for effective release of dormant bermudagrass or bahiagrass. This product may be tank-mixed with Oust as recommended for residual control. Make applications to dormant bermudagrass or bahiagrass. Tank mixtures of this product plus Oust may delay greenup. To avoid delays in greenup and minimize injury, do not add more than 1 ounce per acre of Oust on bermudagrass or more than 0.5 ounce per acre on bahiagrass, or treat when these grasses are in a semi-dormant condition.

For best results on winter annuals, treat when plants are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is in or beyond the 4 to 6-leaf stage.

WEEDS CONTROLLED

Application rates for control or suppression of winter annuals and tall fescue are listed below:

Apply the specified rates of this product alone or as a tank mixture in 10 to 25 gallons of water, plus 0.5 to 1 percent nonionic surfactant by total spray volume per acre.

For the best recommendation for the mixture of weeds within your geographic area, contact your sales representative.

WEEDS CONTROLLED OR SUPPRESSED WITH MAKAZE ALONE*

NOTE: C = Control
S = Suppression

	MAKAZE FLUID OZ/ACRE					
WEED SPECIES	8	12	16	24	32	64
Barley, little *Hordeum pusilium*	S	C	C	C	C	C
Bedstraw, catchweed *Galium aparine*	S	C	C	C	C	C
Bluegrass, annual *Poa annua*	S	C	C	C	C	C
Chervil *Chaerophyllum tainturieri*	S	C	C	C	C	C
Chickweed, common *Stellaria media*	S	C	C	C	C	C
Clover, crimson *Trifolium incarnatum*	•	S	S	C	C	C
Clover, large hop *Trifolium campestre*	•	S	S	C	C	C
Fescue, tall *Festuca arundinaceae*	•	•	•	•	S	S
Geranium, Carolina *Geranium carolinianum*	•	•	S	S	C	C
Henbit *Lamium amplexicaule*	•	S	C	C	C	C
Ryegrass, Italian *Lolium multiflorum*	•	•	S	C	C	C
Speedwell, corn *Veronica arvensis*	S	C	C	C	C	C
Vetch, common *Vicia sativa*	•	•	S	C	C	C

*These rates apply only to sites where an established competitive turf is present.

WEEDS CONTROLLED OR SUPPRESSED WITH MAKAZE PLUS OUST*

NOTE: C = Control
S = Suppression

	MAKAZE + OUST							
	MAKAZE (FL. OZ/A)	8	12	12	16	16	12	16
	+	+	+	+	+	+	+	+
WEED SPECIES	OUST (OZ/A)	¼	¼	½	¼	½	1	1
Barley, little *Hordeum pusilium*		C	C	C	C	C	C	C
Bedstraw, catchweed *Galinium aparine*		C	C	C	C	C	C	C
Bluegrass, annual *Poa annua*		S	C	C	C	C	C	C
Chervil *Chaerophyllum tainturieri*		C	C	C	C	C	C	C
Chickweed, common *Stellaria media*		S	C	C	C	C	C	C
Clover, crimson *Trifolium incarnatum*		S	S	S	S	C	C	C
Clover, large hop *Trifolium campestre*		•	•	S	S	C	C	C
Fescue, tall *Festuca arundinaceae*		•	•	•	•	•	S	S
Geranium, Carolina *Geranium carolinianum*		•	S	S	C	C	C	C
Henbit *Lamium amplexicaule*		•	S	C	C	C	C	C
Ryegrass, Italian *Lolium multiflorum*		•	S	S	C	C	C	C
Speedwell, corn *Veronica arvensis*		S	C	C	C	C	C	C
Vetch, common *Vicia sativa*		C	C	C	C	C	C	C

*These rates or mixtures of rates apply only to sites where an established competitive turf is present.

RELEASE OF ACTIVELY GROWING BERMUDAGRASS

When applied as directed, this product will aid in the release of bermudagrass by providing control of annual species listed in the "WEEDS CONTROLLED" section of this and the Oust label, and suppression or partial control of certain perennial weeds.

For control or suppression of those annual species listed on this label, use 1 to 3 pints of this product as a broadcast spray in 10 to 25 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or length of runner in annual vines). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation.

Use the higher rate of this product for partial control of the following perennial species. Use the lower rates for suppression of growth. For best results, see the "WEEDS CONTROLLED" section of this label for proper stage of growth.

Bahiagrass *Paspalum notatum*	**Fescue, tall** *Festuca arundinacea*	**Trumpetcreeper**** *Campsis radicans*
Bluestem, silver *Andropogon saccharoides*	**Johnsongrass*** *Sorghum halepense*	**Vaseygrass** *Paspalum urvillei*

*Control at the higher rates.
**Suppression at higher rates only.

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 2 pints per acre of this product with 1 to 2 ounces of Oust per acre.

Use the lower rates of both mixtures to control annual weeds below 6 inches in height (or runner length in annual vines) that are listed in the "WEEDS CONTROLLED" section of this booklet and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages.

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EPA REG. NO. 34704-890

Use the higher rates of this product to provide partial control of the following perennial weeds. Use the lower rates for suppression of growth.

Bahiagrass	**Dogfennel**	**Trumpetcreeper****
Paspalum notatum	*Eupatorium capilliforium*	*Campsis radicans*
Bluestem, silver	**Fescue, tall**	**Vaseygrass**
Andropogon saccharoides	*Festuca arundinacea*	*Paspalum urvillei*
Broomsedge	**Johnsongrass***	**Vervain, blue**
Andropogon virginicus	*Sorghum halepense*	*Verbena hastata*
Dock, curly	**Poorjoe****	
Rumex crispus	*Diodia teres*	

*Suppression at higher rates only.
**Control at the higher rates.

COOL SEASON TURF GROWTH REGULATION

When applied as directed, this product will suppress growth and seedhead development of listed turf species in industrial sites. This product is recommended for management of coarse turf on roadside rights-of-way or other industrial areas. Do not use on high-quality turf or other areas where some turf color changes cannot be tolerated. Slight turf discoloration may occur but turf will regreen and regrow under moist conditions as effects of this product wear off.

Apply 4 to 6 fluid ounces of this product per acre alone or in a recommended tank mixture. Spray volumes of 10 to 40 gallons per acre.

This product can be used for growth and seedhead suppression of:

Tall Fescue/Smooth Brome
For best results, apply this product in a recommended tank mixture to actively growing turfgrasses after greenup in the spring of the year. For suppression of seedheads, applications must be made before boot-to-seedhead stage of development. Applications made from seedhead emergence until maturity may result in turf discoloration or injury.

After mowing or removal of seedheads, this product in a recommended tank mixture may also be used to suppress the growth of certain turfgrasses.

Allow turf to recover from stress caused by heat, drought or mowing before making applications. Applications made to turf under stress may increase the potential for discoloration or injury.

ANNUAL GRASSES
For growth suppression of some annual grasses such as annual ryegrass, wild barley and wild oats, apply 3 to 4 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments made after seedhead emergence may cause injury to the desired grasses.

TANK MIXTURES
For the following tank mixtures, consult each product label for weeds controlled and the correct stage of application. Do not treat turf under stress.

TANK MIXTURES PLUS 2,4-D AMINE
For additional weed control benefits, up to 1 pound a.i. per acre of 2,4-D amine may be added to the following tank mixtures. Consult the label for 2,4-D amine for weeds controlled.

TALL FESCUE
Makaze plus Telar®
For suppression of tall fescue growth and seedheads, and control or partial control of some annual weeds, apply this tank mixture after greenup and prior to boot-to-seedhead stage of development. Use up to 0.5 ounce of Telar per acre.

This tank mixture can also be applied after mowing or removal of tall fescue seedheads for turf growth suppression. Make only one of the above applications per growing season.

Makaze plus Oust
For suppression of tall fescue growth and seedheads, and control or partial control of some annual weeds, apply this tank mixture after greenup and prior to boot-to-seedhead stage of development. Use up to 0.25 ounce of Oust per acre.

Makaze plus Escort
This tank mixture can be applied after mowing or removal of tall fescue seedheads for turf growth suppression and control or partial control of some annual weeds. Use up to 1/3 ounce of Escort per acre.

SMOOTH BROME
Makaze plus Oust
For suppression of smooth brome growth and seedheads and control or partial control of some annual weeds, apply this tank mixture after greenup and prior to boot-to-seedhead stage of development. Use up to 0.25 ounce of Oust per acre.

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 roll or shake container or recirculate in mini-bulk or bulk container 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 labeled safeguards until container is cleansed, reconditioned, or destroyed.
CONTAINER DISPOSAL Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying.
For packages up to 5 gallons: 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 ¼ 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.
For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ 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. 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.
For packages greater than 56 gallons: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.
For refillable containers: 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 mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.
Container Disposal: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment by shaking and tapping sides and bottom to loosen clinging particles. Offer for recycling if available or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances.
For help with any spill, leak, fire or exposure involving this material, call day or night CHEMTREC - 1-800-424-9300.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY
BEFORE BUYING OR USING THIS PRODUCT, read the entire Directions for Use and the following Conditions of Sale and Limitation of Warranty and Liability. By buying or using this product, the buyer or user accepts the following Conditions of Sale and Limitation of Warranty and Liability, which no employee or agent of LOVELAND PRODUCTS, INC. or the seller is authorized to vary in any way.

Follow the Directions for Use of this product carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop or other plant injury, ineffectiveness, or other unintended consequences may result from such risks as weather or crop conditions, mixture with other chemicals not specifically identified in this product's label, or use of this product contrary to the label instructions, all of which are beyond the control of LOVELAND PRODUCTS, INC. and the seller. The buyer or user of this product assumes all such inherent risks.

Subject to the foregoing inherent risks, LOVELAND PRODUCTS, INC. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use when the product is used in strict accordance with such Directions for Use under normal conditions of use. EXCEPT AS WARRANTED IN THIS LABEL AND TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THIS PRODUCT IS SOLD "AS IS," AND LOVELAND PRODUCTS, INC. MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ELIGIBILITY OF THIS PRODUCT FOR ANY PARTICULAR TRADE USAGE.

MAKAZE®
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IN THE UNLIKELY EVENT THAT BUYER OR USER BELIEVES THAT LOVELAND PRODUCTS, INC. HAS BREACHED A WARRANTY CONTAINED IN THIS LABEL AND TO THE EXTENT REQUIRED BY APPLICABLE LAW, BUYER OR USER MUST SEND WRITTEN NOTICE OF ITS CLAIM TO THE FOLLOWING ADDRESS: LOVELAND PRODUCTS, INC., ATTENTION: LAW DEPARTMENT, P.O. BOX 1286, GREELEY, CO 80632-1286.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE BUYER'S OR USER'S EXCLUSIVE REMEDY FOR ANY INJURY, LOSS, OR DAMAGE RESULTING FROM THE HANDLING OR USE OF THIS PRODUCT, INCLUDING BUT NOT LIMITED TO CLAIMS OF BREACH OF WARRANTY OR CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHER TORTS, SHALL BE LIMITED TO ONE OF THE FOLLOWING, AT THE ELECTION OF LOVELAND PRODUCTS, INC. OR THE SELLER: DIRECT DAMAGES NOT EXCEEDING THE PURCHASE PRICE OF THE PRODUCT OR REPLACEMENT OF THE PRODUCT. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, LOVELAND PRODUCTS, INC. AND THE SELLER SHALL NOT BE LIABLE TO THE BUYER OR USER OF THIS PRODUCT FOR ANY CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES, OR DAMAGES IN THE NATURE OF A PENALTY.

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Folex is a registered trademark of AMVAC Chemical Corporation.
Garlon, Goal, Spike, TopNotch and Tordon are registered trademarks of Dow AgroSciences, LLC.
Sim-Trol is a registered trademark of Sipcam Agro USA.
Bullet, Guardsman Max, Harness, Lariat, Micro-Tech, Tordon are restricted use pesticides.

FORMULATED FOR
LOVELAND PRODUCTS, INC.
P.O. BOX 1286, GREELEY, COLORADO 80632-1286

MATERIAL SAFETY DATA SHEET

MAKAZE®

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: MAKAZE®
CHEMICAL NAME: Glyphosate: N- (phosphonomethyl)glycine, in the form of its Isopropylamine salt
CHEMICAL FAMILY: Herbicide
EPA REG. NO.: 34704-890
MSDS Number: 000890-09-LPI **MSDS Revisions:** Sections 1, 4, 8, 12 and 13 **Date of Issue:** 02/04/09 **Supersedes:** 11/07/06

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – 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.

This product is clear, viscous yellow-colored solution with amine odor. Primary routes of entry are Inhalation, eye contact and skin contact.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Isopropylamine salt of Glyphosate	41.00	38641-94-0	none established
Inert Ingredients	59.00		

4. FIRST AID MEASURES

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565. Have the product container or label with you when calling a poison control center or doctor.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): None
FLAMMABLE LIMITS (LFL & UFL): Not established
EXTINGUISHING MEDIA: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.
HAZARDOUS COMBUSTION PRODUCTS: Toxic fumes may be emitted in a fire situation.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and full protective clothing. Fight fire from upwind.
UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

In case of leak or spill, contain material and dispose as waste. Do not contaminate any body of water. Sweep up material. Place it and damaged unusable containers in a landfill approved for pesticides. Check local, state and federal regulations for proper disposal.

CAUTION: Prevent spilled material from flowing onto adjacent land, or into municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Wash hands after handling, and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove 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: Store above 10°F (-12.2°C) to keep product from crystallizing. Crystals will settle to the bottom of the container. If allowed to crystallize, place in a warm room at 68°F (20°C) for several days to redissolve. Roll or shake container or recirculate in mini-bulk or bulk containers to mix well before using. Keep tightly closed. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

RESPIRATORY PROTECTION: Not normally required, if mists/vapors exceed acceptable levels, wear a NIOSH approved pesticide respirator for organic vapor and dust/mist.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: long-sleeved shirts and pants, and shoes plus socks. Wear chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
For product	none established	none established

Personal Protective Equipment (PPE): Applicators and other handlers must wear: long sleeved shirt and long pants, shoes plus socks, and protective eyewear, chemical resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride. Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Clear, viscous yellow-colored solution with amine odor **SOLUBILITY:** Soluble
SPECIFIC GRAVITY (Water = 1): 1.1680 g/ml **BULK DENSITY:** 9.75 lbs/gal. **pH:** 4.4 (1% solution))
VAPOR PRESSURE: Not established **BOILING POINT:** Not established
PERCENT VOLATILE (by volume): Not established **EVAPORATION RATE:** Not established
Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable **CONDITIONS TO AVOID:** Use of galvanized or unlined steel.
INCOMPATIBILITY: This product and its spray solutions will react with galvanized or unlined steel to produce hydrogen gas that may form a highly combustible gas mixture, which could flash or explode if ignited. Acids and bases.

HAZARDOUS DECOMPOSITION PRODUCTS: Will emit toxic fumes as it burns.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (rat): >5000 mg/kg **Acute Dermal LD_{50} (rabbit):** >5000 mg/kg
Eye Irritation (rabbit): Causes moderate eye irritation **Skin Irritation (rabbit):** Essentially non-irritating
Inhalation LC_{50} (rat): >7.03 mg/L (4 Hr. Aerosol) **Skin sensitization (guinea pig):** Not a sensitizer
Carcinogenic Potential: None listed in OSHA, NTP, IARC or ACGIH

12. ECOLOGICAL INFORMATION

This product is slightly to moderately toxic in aquatic studies. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. This product has been shown to be practically non-toxic to avian species following sub-acute dietary exposure. Do not contaminate water when disposing of equipment wash waters.
Do not apply when weather conditions favor drift from target area.

13. DISPOSAL CONSIDERATIONS

CONTAINER DISPOSAL: Non-refillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **For packages up to 5 gallons: 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 ¼ 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. **For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ 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. 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.

Disposal Considerations, continued

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. **For packages greater than 56 gallons:** To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. **For refillable containers:** 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 mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

14. TRANSPORT INFORMATION

DOT Shipping Description: NOT REGULATED USDOT.

U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA		HMIS	
1 Health	0 Least	1 Health	
1 Flammability	1 Slight	1 Flammability	
1 Instability	2 Moderate	1 Reactivity	
	3 High	H PPE	
	4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed
SARA, Title III, Section 313: Not listed
RCRA Waste Code: Not listed
CA Proposition 65: Not listed

16. OTHER INFORMATION

MSDS STATUS: Sections 1, 4, 8, 12 and 13 revised

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

®Makaze is a registered trademark of Loveland Products, Inc.

BIG FOOT® SS

SPRAY PATTERN INDICATOR

Designed to mark chemical spray solutions on golf courses, parks, turf, nursery and commercial applications. Eliminates overlapping or skipping of areas.

DIRECTIONS FOR USE

Add to water based spray solutions at the rate of 6-10 oz. per 100 gallons of spray solution. May be used with all types of spray equipment.

CAUTION: Keep out of reach of children.
Wear rubber gloves and eye protection.
Do not take internally. Avoid contact with skin or eyes. In case of eye contact, flush with large amounts of water and consult a physician. If skin contact occurs, wash with soap and water.

BRANDT

Brandt Consolidated, Inc.
2935 South Koke Mill Road
Springfield, Illinois 62711
800 300 6559

0 17622 00018 9

NET CONTENTS: 1 QUART (32 OZ) SUPER CONCENTRATED TEMPORARY BLUE COLORANT

MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Chemical Product
BIG FOOT.

Common Name:	Color additive.
Chemical Description:	Liquid organic colorant.
TSCA/CAS No.:	This product is a mixture — there is no specific CAS number.

Manufactured For
Brandt Consolidated, Inc.
2935 So. Koke Mill Road
Springfield, IL 62711

Emergency Phone Numbers
CHEMTREC (24-Hour Emergency Number): (800) 424-9300
EPA National Response Center: (800) 424-8802

SECTION 2. HAZARDOUS INGREDIENTS

CHEMICAL	CAS NO.	%	TLV OR PEL	RQ (lbs)

None.

SECTION 3. EMERGENCY/HAZARDS OVERVIEW

Dark blue colored solution with bland odor. May cause eye irritation. May be harmful if ingested. Not D.O.T. regulated.

HEALTH: 0 REACTIVITY: 0 FLAMMABILITY: 0 ENVIRONMENT: 0
(0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme)

SECTION 4. FIRST AID

Eyes:	Rinse eyes with plenty of running water for at least 15 minutes. Get medical attention if irritation persists.
Skin:	Wash with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Some dyes may temporarily stain skin.
Ingestion:	May be irritating to the gastrointestinal system. Large quantities can cause vomiting and diarrhea. If large quantities are ingested, dilute with two glasses of water and consult a poison control center or physician.. Do not give anything by mouth to an unconscious person.
Inhalation:	Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth and get medical attention.

SECTION 5. FIRE AND EXPLOSION HAZARDS

Flash Point:	Not available.
Test Method:	Not available.
LEL Flammable Limits:	Not available.
UEL Flammable Limits:	Not available.
Autoignition Temperature:	Not available.
Flammability Classification:	Does not burn.
Known Hazardous Products of Combustion:	Not known.
Properties that Initiate/Contribute to Intensity of Fire:	Not known.
Potential For Dust Explosion:	None.
Reactions that Release Flammable Gases or Vapors:	Not known.
Potential For Release of Flammable Vapors:	Not known.
Unusual Fire & Explosion Hazards:	None.
Extinguishing Media:	Foam, carbon dioxide, dry chemical, or water fog.
Special Firefighting Procedures:	Wear positive pressure, self-contained breathing apparatus and full protective clothing. Avoid smoke inhalation. Contain any liquid runoff.

SECTION 6. SPILLS AND LEAKS

Containment:	Prevent product spillage from entering drinking water supplies or streams.
Clean Up:	Collect liquid or absorb onto absorbent material and package for disposal.
Evacuation:	Not necessary.

SECTION 7. STORAGE AND HANDLING

Storage:	Store in tightly closed original container only in a cool, well-ventilated, dry place at temperatures between 40 and 95°F. Do not store near food or feeds. Do not stack pallets more than two (2) high.
Transfer Equipment:	Transfer product using chemical-resistant plastic or stainless steel tanks, pumps, valves, etc.
Work/Hygienic Practices:	Keep out of reach of children. May cause eye irritation. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wear protective clothing as some dyes may temporarily stain skin. Wash thoroughly with soap and water after handling. Remove and launder clothing before reuse.

SECTION 8. PERSONAL PROTECTIVE EQUIPMENT

Eyes:	Chemical dust/splash goggles or full-face shield to prevent eye contact. As a general rule, do not wear contact lenses when handling.
Skin:	Impervious gloves.
Respiratory:	Not normally needed. If use generates an aerosol mist or respiratory irritation, use NIOSH-approved dust/mist respirator (such as 3M #8710).
Ventilation:	Recommended but no TLV established.

SECTION 9. PHYSICAL AND CHEMICAL DATA

Appearance:	Dark blue colored solution.
Odor:	Bland.
pH:	<7
Vapor Pressure:	20
Vapor Density (Air=1):	Not determined.
Boiling Point:	Approximately 212°
Freezing Point:	Not available.
Water Solubility:	Soluble.
Density:	10.01 lbs./gal
Evaporation Rate:	<1
Viscosity:	Not available.
% Volatile:	Not available.
Octanol/Water Partition Coefficient:	Not available.
Saturated Vapor Concentration:	Not available.

SECTION 10. STABILITY AND REACTIVITY

Stability:	Stable.
Conditions To Avoid:	None known.
Incompatibility:	None known.
Hazardous Decomposition Products:	Not known.
Hazardous Polymerization:	Will not occur.

SECTION 11. POTENTIAL HEALTH EFFECTS

Acute Effects:

Eyes:	Slight irritant. May cause redness and swelling of the conjunctiva.
Skin:	No adverse effects.
Ingestion:	May be irritating to the gastrointestinal system. Large quantities can cause vomiting and diarrhea.
Inhalation:	No significant health hazard under normal use.
Subchronic Effects:	None known.
Chronic Effects:	None known.

SECTION 12. ECOLOGICAL INFORMATION

Algal/Lemna Growth Inhibition:	Not known.
Toxicity to Fish and Invertebrates:	Not known.
Toxicity to Plants:	Not known.
Toxicity in Birds:	Not known.

SECTION 13. DISPOSAL

Do not contaminate lakes, streams, ponds, estuaries, oceans or other waters by discharge of waste effluents or equipment washwaters. Dispose of waste effluents in accordance with state and local waste disposal regulations. Also, chemical additions or other alterations of this product may invalidate any disposal information in this MSDS. Therefore, consult local waste regulators for proper disposal.

SECTION 14. TRANSPORTATION

D.O.T.:	Not D.O.T. Regulated.
Other Shipping Description:	Liquid Ink Material. (NMFC Item 101760 Sub 3, LTL Class 55)

SECTION 15. REGULATORY INFORMATION

CERCLA: None.

SARA TITLE III, Section 313 Toxic Chemicals: None.

SECTION 16. OTHER

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