OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION
WASHINGTON, D.C. 20460

November 6th, 2025

Meshea J. Brodie
US Regulatory Team Leader
UPL NA Inc.
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406

Subject: Label Amendment - Registration Review Mitigation for Oryzalin
Product Name: SURFLAN AS SPECIALTY HERBICIDE
EPA Registration Number: 70506-44
Case Number: 476270
Application Dates: August 26, 2022

Dear Meshea J. Brodie:

The Agency, in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, has completed reviewing all the information submitted with your application to support the Registration Review of the above referenced product in connection with the Oryzalin Interim Decision, and has concluded that your submission is acceptable. The label referred to above, submitted in connection with registration under FIFRA, as amended, is acceptable.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide, Fungicide, and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling and must be used at your next label printing. You must submit one copy of the final printed labeling before you release the product for

shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 12 months from the date of this letter. After 12 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

If you have any questions about this letter, please contact Caleb Carr by phone at 202-566-0636, or via email at carr.caleb@epa.gov.

Sincerely,

Maryam K. Muhammad-Perch, Team Lead
Risk Management and Implementation Branch 4
Pesticide Re-Evaluation Division
Office of Pesticide Programs

ENCLOSURE: Stamped label

| Oryzalin | GROUP | 3 | HERBICIDE |
|---|---|---|---|

# Surflan® AS Specialty Herbicide

[Contains Surflan®] *optional wording*

**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: | |
| oryzalin: 3,5-dinitro-$N^4N^4$-dipropylsulfanilamide | 40.4% |
| Inert Ingredients | 59.6% |
| Total | 100.0% |

Contains 4.0 pounds of active ingredient per gallon.

**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.)

**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 Rocky Mountain Poison and Drug Safety at 1-866-673-6671. For chemical emergency: spill, leak, fire, exposure, or accident, call CHEMTREC 1-800-424-9300.

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

**Shake Well Before Using.**

EPA Reg. No. 70506-44
EPA Est. No.

**UPL NA Inc.**
**630 Freedom Business Center**
**King of Prussia, PA 19064**
**1-800-438-6071**

ACCEPTED
11/06/2025
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 70506-44

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## 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
- Waterproof 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.

### 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 Rocky Mountain Poison and Drug Safety at 1-866-673-6671 for emergency medical treatment information.

### 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.

**Groundwater Advisory**

Oryzalin is known to leach through soil into groundwater under certain conditions as a result of label use. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

**NON-TARGET ORGANISM ADVISORY**
This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated site. Protect the forage and habitat of non-target organisms by following label directions intended to minimize spray drift.

## 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) of24 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
- Waterproof 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 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.
*[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 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. 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.

## WEED RESISTANCE MANAGEMENT

**Mode of action**

Surflan AS Specialty Herbicide contains the active ingredient oryzalin, which controls susceptible annual weeds by disrupting plant growth processes during seed germination.
Any weed population may contain or develop plants naturally resistant to Surflan AS Specialty Herbicide and other Group 3 herbicides. Weed species with acquired resistance to Group 3 may eventually dominate the weed population if Group 3 herbicides are used repeatedly in the same field. Appropriate resistance-management strategies should be followed.

To delay herbicide resistance take one or more of the following steps:

- Rotate the use of Surflan AS Specialty Herbicide or other Group 3 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field. Whenever possible incorporate multiple weed control practices such as mechanical cultivation, biological management practices, and crop rotation.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.
- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that considers tillage (or other mechanical control methods), cultural (e.g. higher crop seeding rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.
- Fields should be scouted before and after application to identify the weed species present and their growth stage to determine if the intended application will be effective. Scout after herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by a mechanical method such as hoeing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- If a weed pest population continues to progress after treatment with this product, discontinue use of this product and switch to another management strategy or herbicide with a different mode of action (MOA), if available. Treat weed escapes with an herbicide with a different MOA or use non-

chemical methods to remove escapes. To the extent possible do not allow weed escapes to produce seeds, roots, or tubers.

- Contact your local extension specialist, certified crop advisors, and/or manufacturer for additional herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes. Report any incidence of non-performance of this product against a particular weed species to your retailer or UPL NA representative.

## Product Information

Surflan AS Specialty 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 Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide**
Users who wish to use Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide. 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.

**MANDATORY SPRAY DRIFT MANAGEMENT**
**Ground Boom Applications**

- User must only apply with the nozzle height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Applicators are required to use a coarse or coarser droplet size, according to the most current version of the American Society of Agricultural & Biological Engineers Standard 572 (ASAE S572).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

**Boomless Ground Applications**

- Applications are required to use a medium or coarser droplet size for all applications, according to the most current version of the American Society of Agricultural & Biological Engineers

Standard 572 (ASAE S572).

- Do not apply when wind speeds exceed 10 miles per hour at the application time.
- Do not apply during temperature inversions.

**SPRAY DRIFT ADVISORIES**
THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

**IMPORTANCE OF DROPLET SIZE**
An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

**Controlling Droplet Size – Ground Boom**

- Volume – increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure – use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle – use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

**BOOM HEIGHT** – Ground Boom
For ground equipment, the boom should remain level with the crop and have minimal bounce.

**SHIELDED SPRAYERS**
Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

**TEMPERATURE AND HUMIDITY**
When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

**TEMPERATURE INVERSIONS**
Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or 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. Avoid applications during temperature inversions.

**WIND**
Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.
Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

## Application

## Soil Preparation

Surflan AS Specialty Herbicide controls weeds growing from seed. Surflan AS Specialty Herbicide will not control emerged weeds. Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide, 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 Specialty Herbicide to the treated area. The volume of water used is not critical, as long as the desired rate of Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty 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 Specialty 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 Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide is 3 fluid oz/1,000 square feet, then you would add 3 fluid ounces of Surflan AS Specialty Herbicide 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 Specialty Herbicide - 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 Specialty Herbicide. Continue agitation and finish filling the spray tank. Maintain continuous agitation until application is completed.

**Surflan AS Specialty Herbicide - 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 Specialty Herbicide. 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 Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide. A minimum of one-half (1/2) inch of rain or its equivalent in sprinkler irrigation is necessary to activate Surflan AS Specialty Herbicide. 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 Specialty Herbicide 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 Specialty Herbicide

**Annual Grasses:**

| **Common Name** | **Scientific Name** |
|---|---|
| barley, little | *Hordeum pusillum* |
| barnyardgrass (watergrass) | *Echinochloa crus-galli* |
| bluegrass, annual | *Poa annua* |
| 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 Specialty Herbicide

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 Specialty Herbicide 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 Specialty Herbicide (qt/acre) | Surflan AS Specialty Herbicide (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 Specialty Herbicide plus glyphosate, and many other labeled herbicides may be used to control undesirable vegetation in ornamental areas. Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide Plus glyphosate:** Tank mix combinations of Surflan AS Specialty Herbicide plus glyphosate are recommended to control existing undesirable vegetation. Applied as directed, Surflan AS Specialty Herbicide 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 Specialty Herbicide. 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 Specialty Herbicide 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 Specialty Herbicide for at least 90 days or crop injury may occur.

Applications of Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide or crop injury may occur.

**Note:** Injury on the following plant species has been observed following applications of Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 |
| *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 |

| **Scientific Name** | **Common Name** | |
|---|---|---|
| | 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 |
| *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* | Califorina sycamore | F |
| *Podocarpus spp.* | Podocarpus | F |
| *Populus deltoides* | Cottonwood | F |

| Scientific Name | Common Name | |
|---|---|---|
| | 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

**Recommended Treatment Method**
**F = Field Grown**
**C = Container Grown**

| Scientific Name | Common Name | |
|---|---|---|
| *Abelia grandiflora* | Glossy abelia | F |
| *Acacia redolens* | Acacia, prostrate | F |
| *Agave americana* | Century plant | F |
| *Agave macroculmis* | Agave | F |
| *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 |

| Scientific Name | Common Name | |
|---|---|---|
| *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 |
| *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 |

| Scientific Name | Common Name | |
|---|---|---|
| *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 |
| *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 lavander | 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 |

| Scientific Name | Common Name | |
|---|---|---|
| *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 |
| *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 pyrcantha | 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 |
| | Rhaphiolepsis (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 |
| *Rhododendron* spp. | Azalea | C,F |
| | Rhododendron | C,F |

| Scientific Name | Common Name | |
|---|---|---|
| *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 |
| *Virbunum suspensum* | Virburnum, 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

**Recommended Treatment Method**
**F = Field Grown**
**C = Container Grown**

| Scientific Name | Common Name | |
|---|---|---|
| *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 |

| Scientific Name | Common Name | |
|---|---|---|
| *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 |
| *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

**Recommended Treatment Method**

| Scientific Name | Common Name | F = Field Grown<br>C = Container Grown |
|---|---|---|
| *Achillea* spp. | Yarrow | C,F |
| *Antirrhinum majus* | Snapdragon | F |
| *Caladium bicolor* | Caldadium, fancy leafed | F |
| *Chrysanthemum* spp. | Chrysanthemum | C,F |
| Mixed hybrid | Dahlia | C,F |
| *Cladium 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<br>F = Field Grown<br>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 Specialty Herbicide may be applied for control of susceptible annual weeds in ornamental bulbs, e.g., bulbous iris, daffodil (narcissus), hyacinth, and tulip. Apply Surflan AS Specialty Herbicide to the soil surface 2-4 weeks after planting, but prior to the emergence of annual weeds. For fall planted bulbs, apply Surflan AS Specialty Herbicide again in late winter or early spring to weed-free soil surfaces.

**Broadcast Application Rates**

| Time of Application | Soil Texture | Surflan AS Specialty Herbicide (qt/acre) | Surflan AS Specialty Herbicide (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 Specialty Herbicide 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 Specialty Herbicide Alone**
Apply Surflan AS Specialty Herbicide 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 Specialty Herbicide (qt/acre) | Surflan AS Specialty Herbicide (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 Specialty Herbicide 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 Specialty Herbicide Plus glyphosate:** Apply tank mix combinations of Surflan AS Specialty Herbicide plus glyphosate only as directed sprays in Christmas tree plantings. When applied according to use directions, Surflan AS Specialty Herbicide 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 Specialty Herbicide. 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 Specialty Herbicide 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 Specialty Herbicide (qt/acre) | Surflan AS Specialty Herbicide (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 Specialty Herbicide 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 limitation before use.

## Warm Season Turfgrasses

Surflan AS Specialty Herbicide 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 Specialty Herbicide only as a part of a total turf management program that includes good fertilization practices.

Surflan AS Specialty Herbicide 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 Specialty Herbicide.

Surflan AS Specialty Herbicide will not control emerged weeds. Successful preemergence control of weeds listed on this label requires that Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide only to healthy, well-established turf that has a well-anchored root system.

Do not apply Surflan AS Specialty Herbicide 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 Specialty Herbicide at 1.5 quarts per acre approximately eight weeks later (Round 2). Do not apply Surflan AS Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide will thin the overseeded grasses.

**Annual Grasses Controlled by Surflan AS Specialty Herbicide**

**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 | *Sorghum halepense* |

(seedling only)
ryegrass, Italian *Lolium multiflorum*
sandbur, field *Cenchrus incertus*

**Winter Annuals:**

| **Common Name** | **Scientific Name** |
|---|---|
| bluegrass, annual | *Poa annua* |

**Annual Broadleaf Weeds Controlled by Surflan AS Specialty Herbicide**

**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 Specialty Herbicide**

| **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 Specialty Herbicide can be applied in the spring for summer annual grass and broadleaf weed control, and in the fall for annual bluegrass *(Poa annua)* and winter annual broadleaf weed control.

**Broadcast Application Rates (Warm Season Turfgrasses)**

| | **Surflan AS Specialty Herbicide** | | **Minimum Time Between Applications** | **Total Amount Allowed Per Year** |
|---|---|---|---|---|
| **Use Area** | **(qt/acre)** | **(fl oz/1000 sq ft)** | **(months)** | **(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 Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide 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 Specialty Herbicide.

2. **Annual Bluegrass *(Poa annua)* and Winter Annual Broadleaf Weeds**

   In areas of heavy annual bluegrass infestation, its elimination will result in temporary thinning of turfgrass cover. Proper fertilization, irrigation, and soil incorporated reseeding should be employed to speed the restoration of desirable turfgrass cover in areas previously occupied by annual bluegrass (see section on reseeding).

Apply Surflan AS Specialty Herbicide as a preemergence treatment in late summer or early fall, prior to the expected germination period for annual bluegrass and winter annual broadleaf weeds. If annual bluegrass infestation is severe and its elimination will result in thinning of turfgrass cover, apply Surflan AS Specialty Herbicide at 1.5 quarts per acre. If thinning of turfgrass cover is not a potential problem, Surflan AS Specialty Herbicide may be applied at 2 quarts per acre.

**Weed Control in Florida**
In Florida, apply 1.5 quarts per acre of Surflan AS Specialty Herbicide 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 Specialty Herbicide in any single application.

**Application Equipment**
Apply Surflan AS Specialty Herbicide 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 Specialty Herbicide. 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 Specialty Herbicide, 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 Specialty Herbicide 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.

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