

DowElanco ID 5949

SURFLAN A.S.

Herbicide

Net Contents - 1 Quart.

A selective preemergence surface-applied herbicide for control of annual grasses and many broadleaf weeds in:

- | | | |
|-------------------------------|--------------------|--------------------------------|
| * Landscape Ornamentals | * Christmas Tree | * Established Warm Season Turf |
| * Container Grown Ornamentals | Plantations | (including Bahiagrass, |
| * Drainage Areas Under | * Noncropland | Bermudagrass, Centipedegrass, |
| Greenhouse Benches | * Non-bearing | St. Augustinegrass, Tall |
| * Ornamental Bulbs | Trees and Vines | Fescue and Zoysiagrass) |
| * Ground Covers | * Industrial Sites | |

Active Ingredient:

oryzalin (3,5-dinitro-N⁴N⁴-dipropylsulfanilamide)..... 40.4%

Inert Ingredients..... 59.6%

Contains 1.0 pound of active ingredient per quart.

Surflan(R) - (oryzalin, DowElanco)

Keep Out of Reach of Children

CAUTION

See back panel for additional precautionary statements

EPA Reg. No. 62719-113

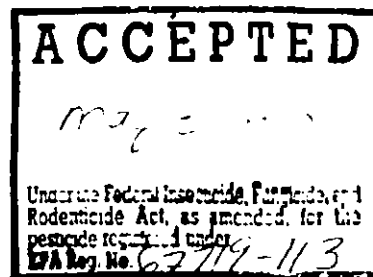
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DowElanco

4040 Vincennes Circle, Suite 601

Indianapolis, IN 46268, U.S.A.



Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Causes eye irritation. Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Surflan A.S. may cause skin sensitization reactions in certain individuals. Mixer/loader/applicators must wear eye protection and protective clothing consisting of coveralls, a long sleeved shirt, shoes, and impermeable gloves when handling this product. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

First Aid

If in eyes: Flush with plenty of water. Get medical attention if irritation develops.

If on skin: Wash with plenty of soap and water. Get medical attention if irritation develops.

If swallowed: Do not induce vomiting. Call a physician or Poison Control Center. If available, administer activated charcoal (6-8 heaping teaspoonfuls) with a large quantity of water. Do not give anything by mouth to an unconscious person. Immediately transport to a medical care facility and see a physician.

If inhaled: Remove individual to fresh air. Get medical attention if breathing difficulty occurs. If not breathing, give artificial respiration, preferably cardiopulmonary resuscitation and get medical attention immediately.

Environmental Hazards

Do not apply directly to water or wetlands. Do not contaminate water when disposing of equipment washwaters. Cover or incorporate spills.

Directions for Use

Read All Directions Carefully Before Applying

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

See Attached literature for complete directions for use.

Shake Well Before Using.

STORAGE AND DISPOSAL

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

Pesticide Disposal: Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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Surflan(R) - (oryzalin, DowElanco)

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FN7153

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Surflan(R) - (oryzalin, DowElanco)
Spike(R) - (tebuthiuron, DowElanco)
Blazon(R) - (Milliken Chemical)
Casoron(R) (dichlobenil, Philips-Duphar)
Dowpon(R) - (dalapon, DowElanco)
Fusilade(R) - (fluzifop-butyl, ICI Americas)
Goal(R) - (oxyfluorfen, Rohm and Haas)
Gramoxone Super(R) - (paraquat, ICI Americas)
Hyvar(R) - (bromacil, duPont)
Karmex(R) - (diuron, duPont)
Krovar(R) I & II - (bromacil plus diuron, duPont)
Oust(R) - (sulfometuron methyl, duPont)
Poast(R) - (sethoxydim, BASF)
Princep(R) - (simazine, Ciba-Geigy)
Roundup(R) - (glyphosate, Monsanto)
Sencor(R) - (metribuzin, Bayer)
Telar(R) - (chlorsulfuron, duPont)

Precautionary Statements

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GENERAL INFORMATION

Surflan A.S. is a preemergence surface-applied herbicide for the control of annual grasses and many broadleaf weeds.

General Use Precautions

Surflan will not control established weeds.

Surflan is an orange chemical. If temporary orange coloration is undesirable, it may be altered by using a commercially available colorant such as Blazon(R).

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

Soil Preparation

Surflan will not control established weeds. Therefore, areas to be treated should be free of established weeds. Weed residues, prunings and trash should be thoroughly mixed into the soil or removed prior to treatment. The soil should be in good till and free of clods at the time of application.

Mixing Directions

Surflan Alone

Make sure spray tank is clean. Fill spray tank 1/3 to 1/2 full with clean water. Start agitation. Add the required amount of Surflan A.S., continue agitation and finish filling the spray tank. Maintain continuous agitation from mixing through application.

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

Surflan Tank-Mix Combinations

Vigorous, continuous agitation is required for all Surflan tank-mixes. Sparger pipe agitators generally provide the best agitation in spray tanks. To prevent foaming, keep the end of the fill pipe below the surface of the water in the spray tank during filling to prevent air from being stirred or splashed into the mixture.

Mixing Order:

Fill the tank 3/4 full with clean water. Start agitation. 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 and other aqueous suspensions (AS), flowables (F) and liquids (L); solutions (S); and emulsifiable concentrates (EC).

Maintain continuous agitation during mixing, final filling and throughout application. 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. Settled materials may be more difficult to resuspend than when originally mixed.

Premixing:

When tank mixing, initial mixing and dispersion of certain dry flowable or wettable powder products may be improved by premixing with water (slurrying). Where recommended, follow product label instructions for each material. Adding the slurried material to the spray tank through a 20 or 35 mesh wetting screen will help assure good initial dispersion. Line screens in the tank should be no finer than 50 mesh (100 mesh is finer than 50 mesh).

Application

Ground Application:

Apply Surflan as a directed spray to the soil surface or as an overtop spray. Apply Surflan in sufficient spray volume to uniformly treat the area. Use only a properly calibrated, low-pressure herbicide sprayer that will apply the spray uniformly. Use herbicide tips and screens no finer than 50 mesh in nozzles and in-line strainers. As the amount of water used (spray volume) decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily to insure proper calibration and uniform application. Maintain continuous agitation from mixing through application. Avoid boom overlaps that will increase the application rate above that recommended.

Aerial Application:

Use a standard aerial herbicide boom sprayer. Aerial spray equipment should be calibrated to apply the proper amount of Surflan alone or in tank-mix combinations in 2 to 10 gallons of spray mixture per acre. Nozzle screens and in-line strainers should be no finer than 50 mesh for tank-mix combinations. Surflan (alone or in tank-mix combinations) mixes readily with water for concentrate aerial sprays; however, constant vigorous agitation that sweeps the contents from the bottom of the spray tank up into the main body of the liquid is required to maintain a uniform suspension until the spray tank is empty. Avoid overlap of spray patterns. Do not apply when wind conditions favor drift from the target area.

Activation and Cultivation

Surflan will remain stable on the soil surface up to 21 days. In absence of timely rainfall, irrigation can be used to move Surflan into the soil surface. A one-half (1/2) inch rain or its equivalent in sprinkler irrigation is necessary to activate Surflan. If weeds begin to emerge due to lack of rainfall or irrigation, shallow cultivate 1 to 2 inches deep to destroy existing weeds and place Surflan in the weed germination zone. Shallow cultivation to a depth of 1 to 2 inches will not reduce herbicidal effectiveness. In containers, remove existing weeds by hand. If Surflan is not activated by rainfall, irrigation or cultivation within 21 days of application, erratic weed control may result.

Ornamental Plantings

Precautions:

Apply only to established plantings. Rooted liners should be established in containers two weeks prior to treatment or crop injury may occur.

On container grown ornamentals where weed seed germination continues for extended periods of time, subsequent applications of Surflan should not be made any sooner than 90 days or crop injury may occur.

Do not apply Surflan in ornamental plantings where the likelihood of runoff onto lawn areas containing dichondra or cool-season turfgrass species exists as severe injury or death may occur. Poor weed control may result if directions are not followed. Overapplication may result in crop injury or excessive soil residue.

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

Do not apply to gaidioli corns less than 1 inch in diameter. It is recommended that Surflan be applied after emergence.

Ice Plant: When establishing unrooted Ice Plant on coarse soils in landscape plantings, use only the 2 quart per acre rate of Surflan A.S. or crop injury may occur. After the Ice Plant is well established, a second application may be made.

Douglas Fir: Do not treat field grown Douglas Fir plantings until the third season after transplanting.

Broadcast Application Rates

Length of Control	Surflan A.S.
Short Term Control (2-4 months)	2 quarts per acre (1.5 fl oz per 1000 sq ft)
Long Term Control (6-8 months)	4 quarts per acre (3 fl oz per 1000 sq ft)

Grasses Controlled by Surflan

Common Name	Scientific Name
Barley, little	Hordeum pusillum
Barnyardgrass (Watergrass)	Echinochloa crus-galli
Bluegrass, annual	Poa annua
Crabgrass (Large crabgrass)	Digitaria spp.

(Smooth crabgrass)	
Crowfootgrass	Dactyloctenium aegyptium
Cupgrass, southwestern	Eriochloa gracilis
Foxtails	Setaria spp.
(Bottlegrass)	
(Bristlegrass)	
(Giant foxtail)	
(Green foxtail)	
(Pigeongrass)	
(Robust foxtail)	
(Yellow foxtail)	
Goosegrass	Eleusine indica
(Silver crabgrass)	
Johnsongrass	Sorghum halepense
(seedling only)	
Junglerice	Echinochloa colonum
Lovegrass, Mexican	Eragrostis mexicana
Lovegrass, orcutt	Eragrostis orcuttiana
Oat, wild	Avena fatua
Panicum, browntop	Panicum fasciculatum
Panicum, fall	Panicum dichotomiflorum
(Spreading panicgrass)	
Panicum, Texas	Panicum texanum
(Buffalograss)	
(Coloradograss)	
Ryegrass, Italian	Lolium multiflorum
Sandbur, field	Cenchrus incertus
Signalgrass (Brachiaria)	Brachiaria spp.
Sprangletop, red	Leptochloa filiformis
Witchgrass	Panicum capillare

Broadleaf Weeds Controlled by Surflan

Common Name	Scientific Name
Bittercress	Cardamine spp.
Carpalweed	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
Pigweeds	Amaranthus spp.
(Carelessweed)	
(Prostrate pigweed)	
(Redroot)	
(Rough pigweed)	
(Spring pigweed)	
(Tumble pigweed)	
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

Suppression 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.

Surflan does not control established weeds.

Recommended Species Including Fruit Plant Nursery Liners

Surflan is recommended for use on all field grown established ornamental plants, trees and shrubs; established ground covers; field grown fruit tree and shrub nursery liners; and in the production of ornamental bulbs (See special directions on the use of Surflan A.S. for ornamental bulb production).

ALL ORNAMENTALS ON THE FOLLOWING LIST MAY BE TREATED WHEN FIELD GROWN; WHERE INDICATED, LISTED SPECIES MAY ALSO BE TREATED WHEN CONTAINER GROWN.

Common Name	Scientific Name	Recommended Treatment Method: C = Container Grown; F = Field Grown (F/C)
Abelia, Glossy	Abelia grandiflora	F
Acacia, Prostrate	Acacia redolens	F
Agave	Agave macrocarpa	F

Andromeda	Pieris japonica	F,C
Apple	Malus spp.	F
Arborvitae, American	Thuja occidentalis	F,C
Arborvitae, Oriental	Platycladus orientalis	F,C
Ash	Fraxinus spp.	F
Astilbe/False Spirea	Astilbe chinensis and A. chinensis hybrids	F,C F
Azalea	Rhododendron spp.	F
Barberry, Japanese	Berberis thunbergii	F,C
Bellflower	Campanula elatines	F,C
Bird of Paradise	Strelitzia reginae	F
Blazing Star	Liatris spicata	F,C
Bleeding Heart	Dicentra spectabilis	F,C
Bottlebrush, Lemon	Callistemon citrinus	F,C
Boxwood, Common	Buxus sempervirens	F,C
Boxwood, Japanese	Buxus microphylla japonica	F
Brush Cherry	Syzygium paniculata	F,C
California laurel	Umbellularia californica	F
Cape Marigold	Dimorphanthe a spp.	F
Cassia, Feathery	Cassia artemisioides	F
Cherry, Mahaleb	Prunus mahaleb	F
Cherry, Sweet	Prunus avium	F
Chrysanthemum, Florists	Chrysanthemum morifolium	F
Cleyera, Japanese	Cleyera japonica	F,C
Cotoneaster	Cotoneaster spp.	F,C
Coyotebush, Dwarf	Baccharis pilularis	F
Crape Myrtle, Common	Lagerstroemia indica	F,C
Cryptomeria, Japanese	Cryptomeria japonica	F,C
Cypress, Arizona	Cupressus arizonica (glabra)	F,C
Cypress Italian	Cupressus sempervirens	F,C
Daisy, Painted	Chrysanthemum coccineum	F
Daisy, Trailing African	Osteospermum fruticosum	F
Daylily	Heemerocalis spp.	F
Dogwood, Flowering	Cornus florida	F
Eastercactus	Rhipsalidopsis gaertneri	F,C
Escallonia	Escallonia exoniensis	F,C
Eucalyptus	Eucalyptus spp.	F
Euonymus	Euonymus spp.	F,C
Falsecypress, Lawson	Chamaecyparis lawsoniana	F
Fatshedera	Fatshedera lizei	F,C
Fir	Abies spp.	F
Fir Douglas	Pseudotsuga menziesii	F
(See precautions for ornamental plantings)		
Firethorn	Pyracantha spp.	F,C
Forsythia, Border	Forsythia intermedia	F
Gardenia	Gardenia jasminoides	F,C
Gazania, Trailing	Gazania rigens leucolaena	F
Geranium (Pelargonium)	Pelargonium hortorum	F
Ginkgo	Ginkgo biloba	F,C
Garden Gladiolus	Gladiolus hortulanus	F
Goldenrain Tree	Koelreuteria paniculata	F
Heavenly bamboo (Nandina)	Nandina domestica	F
Hibiscus, Chinese	Hibiscus rosa-sinesis	F
Holly, Chinese	Ilex cornuta	F,C

Holly, English	<i>Ilex aquifolium</i>	F
Holly, Japanese	<i>Ilex crenata</i>	F
Honeysuckle, Japanese	<i>Lonicera japonica</i>	F
Honeysuckle, Mexican	<i>Justicia spicigera</i>	F
Hopseedbush, Clammy	<i>Dodonaea viscosa</i>	F
Ice Plant, Largeleaf	<i>Carpobrotus edulis</i>	F
(See precautions for ornamental plantings)		
Ice Plant	<i>Mesembryanthemum crystallinum</i>	F
(See precautions for ornamental plantings)		
Impatiens (Busy Lizzie)	<i>Impatiens wallerana</i>	F
Iris, Bearded	<i>Iris</i> spp.	F
Ivy, Algerian	<i>Hedera canariensis</i>	F
Ivy, English	<i>Hedera helix</i>	F
Jerseytea redroot	<i>Ceanothus americanus</i>	F,C
Juniper	<i>Juniperus</i> spp.	F,C
Laurel, Mountain	<i>Kalmia latifolia</i>	F
Laurel Cherry, Carolina	<i>Prunus caroliniana</i>	F
Laurelcherry, English	<i>Prunus laurocerasus</i>	F
Leucothoe, Coast	<i>Leucothoe axillaris</i>	F
Leucothoe, Drooping	<i>Leucothoe fontanesiana</i>	F
Lilac, Common	<i>Syringa vulgaris</i>	F,C
Lily, Plantain	<i>Hosta</i> spp.	F
Lilyturf, Bigblue	<i>Liriope muscari</i>	F,C
Lily-of-the-Nile	<i>Agapanthus africanus</i>	F,C
Magnolia, Southern	<i>Magnolia grandiflora</i>	F
Manzanita, Stanford	<i>Arctostaphylos stanfordiana</i>	F
Maple	<i>Acer</i> spp.	F
Marigold	<i>Tagetes</i> spp.	F
Mockorange	<i>Philadelphus</i> spp.	F,C
Moss, Rose	<i>Portulaca grandiflora</i>	F
Myoporum, Prostrate	<i>Myoporum parvifolium</i>	F
Myrtle, True	<i>Myrtus communis</i>	F,C
Oak	<i>Quercus</i> spp.	F,C
Oleander	<i>Nerium oleander</i>	F,C
Oregon Grape	<i>Mahonia aquifolium</i>	F
Osmanthus, Holly-leaf	<i>Osmanthus heterophyllus</i>	F
Palo Verde, Blue	<i>Cercidium floridum</i>	F
Pansy	<i>Viola wittrockiana</i>	F
Pear	<i>Pyrus communis</i>	F
Periwinkle, Bigleaf	<i>Vinca major</i>	F
Periwinkle, Dwarf	<i>Vinca minor</i>	F
Petunia	<i>Petunia</i> spp.	F
Photinia	<i>Photinia fraseri</i>	F,C
Pine	<i>Pinus</i> spp.	F,C
Pittosporum	<i>Pittosporum</i> spp.	F,C
Privet	<i>Ligustrum</i> spp.	F,C
Redcedar, Eastern	<i>Juniperus virginiana</i>	F
Red Cedar, Western	<i>Thuja plicata</i>	F
Redwood, Coast	<i>Sequoia sempervirens</i>	F
Rhaphiolepis (India Hawthorn)	<i>Rhaphiolepis indica</i>	
Rhododendron	<i>Rhododendron</i> spp.	F,C
Rose	<i>Rosa</i> spp.	F
Rose-of-Sharon (Shrubalthea)	<i>Hibiscus syriacus</i>	F
Sage	<i>Salvia</i> spp.	F

Shrimp Plant	Justicia brandegeana	F,C
Snapdragon	Antirrhinum majus	F
Sotol, Desert Spoon	Dasyliirion wheeleri	F
Spruce	Picea spp.	F
Star Jasmine, Chinese	Trachelospermum jasminoides	F
Stonecrop	Sedum brevifolium	F
Sumac, African	Rhus lancea	F,C
Sweetgum, American	Liquidambar styraciflua	F,C
Trumpet Vine, Violet	Clytostoma callistegioides	F,C
Viburnum, Laurustinus	Viburnum tinus	F,C
Viburnum, Sandankwa	Viburnum suspensum	F
Weigela, Oldfashioned	Weigela florida	F
Wintercreeper	Eucnymus fortunei	F,C
Xylosma, Japanese	Xylosma congestum	F
Yarrow	Achillea spp.	F
Yaupon	Ilex vomitoria	F,C
Yew	Taxus media	F
Yew, Japanese	Taxus cuspidata	F
Yewpine	Podocarpus macrophyllus	F,C
Yucca, Pendulous	Yucca recurvifolia	F
Yucca, Soaptree	Yucca elata	F,C
Zinnia, Common	Zinnia elegans	F

Field Grown Fruit Plant Nursery Liners

Surflan is recommended for the following species:

Almond	Grapefruit	Pear
Apple	Kiwi	Pecan
Apricot	Lemon	Pistachio
Avacado	Macadamia Nut	Plum
Cherry	Nectarine	Pomegranate
Fig	Olive	Prune
Filbert	Orange	Walnut, English
Grape		

Small Fruits:

Blackberry	Currant	Gooseberry
Blueberry	Dewberry	Loganberry
Boysenberry	Elderberry	Raspberry

Tznk-Mix Combinations

Tank-mix combinations of Surflan plus Roundup(R), Fusilade(R), Goal(R) and Poast(R) are recommended to control undesirable vegetation in ornamental areas. Applied as directed, these Surflan tank-mixes will provide control of susceptible species listed on the respective labels. Read the product labels for directions, precautions and limitations prior to use.

Surflan/Roundup Tank-Mix

Tank-mix combinations of Surflan/Roundup are recommended to control existing undesirable vegetation. Applied as directed, Surflan plus Roundup will provide control of susceptible species listed on the respective labels of the two herbicides.

Precaution:

Roundup is not recommended as an over-the-top spray in ornamentals. Extreme care must be exercised to prevent contact of Roundup-containing sprays with foliage of desirable turfgrasses, trees, shrubs, or other desirable vegetation since severe damage or destruction may result.

Note: If spraying with Roundup in areas adjacent to desirable plants, use a shield made of cardboard, sheet metal, or plywood to help prevent spray from contacting foliage of desirable plants.

Ornamental Bulbs

Precaution:

In the spring, do not apply to tulip plants that have emerged to a height greater than 3/4 inch. Deep plow prior to planting any crop after this use.

Directions for Use

Surflan may be applied for control of susceptible annual weeds in ornamental bulbs, e.g., bulbous iris, daffodil (narcissus), hyacinth and tulip.

Apply Surflan to the soil surface in the fall, 2 to 4 weeks after planting and final hilling, but prior to the emergence of annual weeds.

Apply Surflan again in late winter or early spring to weed-free soil surfaces.

Broadcast Application Rates

Surflan A.S.			
Soil Texture	Time of Application	Amount per Acre	Amount per 1000 sq ft
Coarse	Fall	1 1/2 pints	1/2 fl oz
Medium & Fine	Fall	3 pints	1 fl oz
All	Feb.-March	1 1/2 pints	1/2 fl oz

Christmas Tree Plantations

Surflan Alone

Apply Surflan as a directed spray to the soil surface or as an overtop spray to established plantings of field grown Christmas tree species. Follow all instructions provided in the "Directions for General Use" section of this label. Surflan does not control established weeds.

Broadcast Application Rates:

Length of Control	Surflan A.S.
Short term control (2-4 months)	2 quarts per acre
Long term control (6-8 months)	4 quarts per acre

Tank-Mix Combinations

Surflan/Princep(R) or Goal(R):

Tank-mix combinations of Surflan and Princep 80W or Goal are recommended as directed or overtop sprays in 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 additional use directions, precautions and limitations prior to use.

Surflan/Roundup:

Tank-mix combinations of Surflan plus Roundup are recommended as directed sprays in Christmas tree plantings. When applied according to use directions, Surflan plus Roundup will provide control of susceptible weed species listed on the respective product labels.

Broadcast Application Rates:

Surflan A.S.	Roundup	
	Existing Annual and Broadleaf Weeds	Quarts per Acre
2-4	Less than 6 inches tall	1
2-4	More than 6 inches tall	1 1/2
2-4	Existing perennial weeds	2-5

Precaution:

Roundup is not recommended as an over-the-top spray in Christmas tree plantings. Extreme care must be exercised to avoid contact of spray containing Roundup with foliage of Christmas trees or severe damage or death may result.

Noncropland Areas and Industrial Sites

Noncropland Areas - Tank-Mix Combinations

Tank-mix combinations of Surflan plus Roundup, Fusilade(R), Goal and Poast(R) are recommended to control undesirable vegetation in noncropland areas. Applied as directed, these Surflan tank-mixes will provide control of susceptible species listed on the respective product labels. Refer to the tank-mix product labels for additional use directions, precautions and limitations prior to use.

Broadcast Application Rates

Surflan A.S.*		Roundup		
Noncropland Areas		Existing Annual	Fluid Ounces	Quarts
(quarts/acre) (oz/1000 sq ft)		and	Per 1000	per
		Broadleaf Weeds	sq ft	Acre
2 to 6	1 1/2-4 1/2	Less Than 6" Tall	3/4	1
2 to 6	1 1/2-4 1/2	More Than 6" Tall	1 1/8	1 1/2
2 to 6	1 1/2-4 1/2	Existing Perennial Weeds	1 1/2-3 3/4	2-5

* Length of weed control period will vary with the rate applied. Usually 2 quarts per acre will provide 2 to 4 months control; 4 quarts per acre, 6 to 8 months control; and 6 quarts per acre, 8 to 12 months control.

Industrial Sites - Tank-Mix Combinations

Tank-mix combinations of Surflan plus Spike (R), Casoron(R), Dowpon(R), Hyvar(R) X, Karmex(R) (diuron), Krovar(R) I & II, MSMA, Oust(R), Gramoxone Super(R), Roundup, 2,4-D, Princep (simazine), Sencor(R), and Telar(R), are recommended as overtop sprays to control existing vegetation on industrial areas including utility substations, highway guard rails, sign posts and delineators. Applied as directed, these Surflan tank-mixes will provide control of susceptible species listed on the respective product labels. Read the product labels for directions, precautions and limitation prior to use.

Warm Season Turfgrasses

General Information

Surflan may be applied as a preemergence treatment for control of annual grasses and certain broadleaf weeds in established warm season turf including bahiagrass, bermudagrass, centipedegrass, established tall fescue, St. Augustinegrass and zoysiagrass. Surflan works by controlling weeds as they germinate.

Surflan can be applied to ornamental trees and shrubs adjacent to turf areas. Refer to the "Ornamental Plantings" section of this label for use instructions.

Successful preemergence control of annual grass weeds listed on this label requires proper timing of application. Apply Surflan prior to the germination of annual grass weeds. All summer annual grasses do not germinate at the same time. If application timing does not coincide with the normal germination period of any of the annual grass weeds listed on this label, weed control results may be erratic or poor. In the absence of timely rainfall, irrigation can be used to move Surflan into the soil surface.

Precautions:

Surflan will not control established weeds.

Surflan may injure turf that is not well established or is in a weakened condition due to winter climatic conditions or drought. Apply Surflan only to healthy, well-established turf.

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

Do not apply Surflan in the spring or summer to tall fescue turfgrass reseeded the previous fall. In bermudagrass areas that have been overseeded with winter grasses, a spring application of Surflan will thin the overseeded grasses.

Do not apply Surflan to newly sprigged areas of bermudagrass, St. Augustinegrass, centipedegrass or zoysiagrass until these turfs are well established.

Do not apply Surflan to newly hydromulched areas of bermudagrass until these areas are well established.

Do not apply Surflan to golf course putting greens.

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

Areas planted to bermudagrass var. "Sun Turf" in Northeastern Oklahoma have shown sensitivity to Surflan that has been tank-mixed with atrazine.

Annual Grass Weeds in Turf Controlled by Surflan

Summer Annuals:

Common Name	Scientific Name
Barnyardgrass (Watergrass)	Echinochloa crus-galli
Crabgrass (Large crabgrass) (Smooth crabgrass)	Digitaria spp.
Crowfootgrass	Dactyloctenium aegyptium
Foxtails (Bottlegrass) (Bristlegrass) (Giant foxtail) (Green foxtail) (Pigeongrass) (Robust foxtail) (Yellow foxtail)	Setaria spp.
Goosegrass (Silver crabgrass)	Eleusine indica
Johnsongrass (Seedling only)	Sorghum halepense
Ryegrass, Italian	Lolium multiflorum
Sandbur, field	Cenchrus incertus

Winter Annuals

Common Name	Scientific Name
Bluegrass, annual	Poa annua

Annual Broadleaf Weeds Controlled by Surflan

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 Partially Controlled by Surflan

Common Name	Scientific Name
Groundsel, common	Senecio vulgaris
Spurge, prostrate	Euphorbia humistrata
Woodsorrel, yellow	Oxalis stricta

Surflan does not control established weeds.

Application Rates, Frequency and Timing of Application

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

1. Spring Germinating Summer Annual Grasses and Broadleaf Weeds

A. Single Application Program

For preemergence control, apply 2 to 3 quarts Surflan A.S. per acre (2 to 3 packets per acre) in late winter or early spring prior to onset of conditions favorable for annual weed germination. Apply the 3 quart per acre rate in areas with a longer growing season or where control of weeds is required for a longer period of time.

B. Split Application Program

As an alternative to a single application program, Surflan A.S. 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 1/2 quarts per acre of Surflan A.S. in an initial application, followed by a second application of 1 1/2 quarts per acre 8 to 10 weeks later.

The split application program is recommended where established tall fescue is the dominant turfgrass species.

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

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 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 A.S. at 1 1/2 quarts. If thinning of turfgrass cover is not a potential problem, Surflan A.S. may be applied at 1 1/2 to 3 quarts per acre depending on the degree of expected winter annual weed infestation and length of control desired. For treatment of small areas, use the application rates expressed in "fluid ounces per 1000 sq ft" which correspond to the desired broadcast application rate indicated in the following table.

Application Rates for *Poa annua* and Winter Annual Weed Control

Surflan A.S.	
(quarts per acre)	(fl oz per 1000 sq ft)
1 1/2	1
2	1 1/2
3	2

Application Equipment

Apply Surflan evenly over the turfgrass area and avoid skips, misses and overlaps. For best results use equipment designed to broadcast apply liquid herbicides or insecticides. Calibrate application equipment prior to use, according to manufacturer's directions. Check equipment frequently to make sure it is working properly and spraying 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. 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 Surflan use, 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.

DISCLAIMER OF WARRANTIES

DowElanco makes no warranties concerning this product or its use, which extend beyond the description on the label. DowElanco also expressly disclaims all warranties express or implied, in relation to any use of this product in combination or sequential use with any other product not specifically recommended in writing by DowElanco. All other warranties, express or implied, including but not limited to, any implied warranties

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LIMITATION OF DAMAGES

The liability of DowElanco, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the return of the amount of the purchase price of this product and under no circumstances shall DowElanco be liable for special, indirect or consequential damages. If Surflan A.S. is used in a combination or sequential use recommended by DowElanco, the liability of DowElanco shall in no manner extend to any damage, loss or injury not directly caused by the inclusion of Surflan A.S. in such combination or sequential use. This limitation of damages does not apply where prohibited by operation of law.

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