

Specimen Label



Dow AgroSciences



SPECIALTY HERBICIDE

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For postemergence control of annual and perennial broadleaf weeds in: Established lawns, commercial sod farms, ornamental and sports turf (including sport fields, golf course fairways, roughs, tee boxes, unimproved turfgrass areas), and cemeteries

Not for sale, distribution, or use in Nassau or Suffolk Counties of New York State

Active Ingredient:

florasulam: N-(2,6-difluorophenyl)-8-fluoro-5-methoxy (1,2,4)triazolo(1,5-c)pyrimidine-2-sulfonamide.....	4.84%
Other Ingredients	95.16%
Total	100.00%

Contains 0.42 lb of active ingredient per gallon.

Precautionary Statements

Hazards to Humans and Domestic Animals

EPA Reg. No. 62719-560

Keep Out of Reach of Children

CAUTION

Caution: Harmful If Absorbed Through Skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE)

WPS Uses: Any use covered by the Worker Protection Standard (40 CFR Part 170) – agricultural plant uses are covered-

Applicators and other handlers must wear:

- Chemical-resistant gloves
- Shoes plus socks

Mixers and loaders must wear:

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

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

Engineering Controls

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

User Safety Recommendations

Users should:

- 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.

Environmental Hazards

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

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

Directions for Use

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

Read all Directions for Use carefully before applying.

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

Agricultural Use Requirements

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

For early entry into 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, wear:

- Coveralls
- Chemical-resistant gloves
- Shoes plus socks

Non-Agricultural Use Requirements

The requirements of 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 unprotected persons out of treated areas 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. Storage below 14°F will cause the product to freeze. If product freezes, bring to room temperature and agitate before use.

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

Nonrefillable containers 5 gallons or less:

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down

Storage and Disposal (Cont.)

over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Refillable containers 5 gallons or larger:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Nonrefillable containers 5 gallons or larger:

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Product Information

Defendor® specialty herbicide provides postemergence control of annual and perennial broadleaf weeds in established lawns (residential and commercial), commercial sod farms, ornamental and sports turf, (sports fields, golf course fairways, roughs, tee boxes, unimproved turfgrass areas), and cemeteries. Susceptible weeds emerged at the time of application will be controlled. Uniform coverage is required for optimum performance. Defendor is rainfast within four hours after application and has soil residual herbicidal activity dependent upon weed species, soil type, soil moisture (rainfall or irrigation after application) and the rate of application.

Mixing Directions

Defendor - Alone

1. Fill spray tank with water equal to 1/2 to 3/4 of the required spray volume.
2. Start agitation.
3. Add the required amount of Defendor, then finish filling the tank.
4. Continue agitation while filling the spray tank to the required volume and during application. Apply mixture immediately after it is prepared. If product is allowed to settle, thoroughly agitate to resuspend the mixture before spraying.

Defendor - Tank Mix

Defendor may be applied in tank mix combination with other herbicides labeled for use on turfgrass to control additional weeds. When tank mixing, follow label directions, including application rates, use precautions and limitations on each respective label. Continuous agitation is required for tank mixes.

Tank Mix Precautions:

- It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

- Do not exceed specified application rates for respective products or maximum allowable application rates for any active ingredient in the tank mix. Do not tank mix with another pesticide product that contains the same active ingredient as this product unless the label of either tank mix partner specifies the maximum dosages that may be used.
- For other products packaged in water soluble packaging, do not tank mix with products containing boron or mix in equipment previously used to apply a product mixture containing boron unless the tank and spray equipment has been adequately cleaned.
- Always perform a (jar) test to ensure the compatibility of products to be used in tank mixture.

Tank Mix Compatibility Testing: When tank mixing Defendor with other materials, a jar test using relative proportions of the tank mix ingredients should be conducted prior to mixing ingredients in the spray tank. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately 1/2 hour. If the mixture balls-up, forms flakes, sludges, gels, oily films or layers, or other precipitates, it is not compatible and the tank mix combination should not be used.

Vigorous, continuous agitation during mixing, filling and throughout application is required for all tank mixes.

Mixing Order for Tank Mixes:

1. Fill the spray tank with water to 3/4 of the required spray volume.
2. Start agitation.
3. Add the correct amount of Defendor and agitate for 2 to 3 minutes.
4. After adding Defendor, add different formulation types in the following order: (1) dry flowables; (2) wettable powders; (3) aqueous suspensions, flowables and liquids. Maintain agitation and add (4) emulsifiable concentrates; (5) solutions; and (6) adjuvants. Allow each product type to completely mix and disperse before adding another.
5. Finish filling the spray tank. Maintain continuous agitation during mixing and throughout application. If product is allowed to settle, thoroughly agitate to resuspend the mixture before spraying. Apply mixture immediately after it is prepared.

If application or agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be resuspended before spraying is resumed. A sparger agitator is particularly useful for this purpose. Settled material may be more difficult to resuspend than when originally mixed. For best results, Defendor used alone or in tank mixes should not sit overnight or for prolonged periods without sufficient agitation prior to use.

Clean Out Procedures for Spray Equipment

1. Drain any remaining spray mixture from the application equipment.
2. Hose down the interior surfaces of the tank while filling the tank 1/2 full of water.
3. Add household ammonia at a rate of 1 gallon per 100 gallons of water. Recirculate for 5 minutes and spray out part of this mixture for 5 minutes through the boom. Drain tank.
4. Remove all spray nozzles and screens and clean separately.
5. If spray equipment will be used for pesticide application to trees, shrubs, ornamental plants, or broadleaf crops that may be sensitive to Defendor, repeat steps 1 through 3. This product is highly active at low rates. It is best not to use the same sprayer to treat trees, shrubs, or ornamental plants after use with this product.
6. Thoroughly clean exterior surfaces of spray equipment.

Note: Rinsate may be disposed of on site according to label use directions or at an approved waste disposal facility.

Application Directions

Adjuvants

When Defendor is applied alone, use a non-ionic surfactant with at least 80% active ingredient at 2 pints per 100 gallons of spray solution (0.25% v/v). When Defendor is applied in combination with emulsifiable concentrate formulations such as 2,4-D ester or MCPA ester, or other herbicides which require use of an adjuvant, additional adjuvant is not required. When an adjuvant is to be used with this product, Dow AgroSciences recommends the use of a Chemical Producers and Distributors Association certified adjuvant.

Standard Volume Broadcast Application

Apply in a spray volume of 20 gpa or more (0.5 gallons or more per 1000 sq ft). Use a higher application volume when complete and uniform application must be ensured, i.e., when Defendor is tank mixed with foliar fertilizers. If required, spray volume up to 200 gpa may be used.

Low Volume Application

Apply in a spray volume of 5 to 20 gpa (0.11 to 0.5 gallons per 1000 sq ft). Use low pressure and application equipment capable of delivering a uniform spray droplet. To improve spray coverage, the addition of a nonionic surfactant is suggested (see Adjuvants).

Spot Treatments and/or Hand-Held Sprayers

Apply spot treatments at rates equivalent to broadcast applications.

Hand-Held Sprayers: When treating a small area, apply Defendor with a calibrated sprayer that assures accurate, uniform spray distribution. Thoroughly mix Defendor with clean water and applied at 20 to 40 psi in a minimum of 1 gallon of water per 1000 sq ft.

Weeds Controlled or Suppressed by Defendor

To maximize control of early season spring weeds apply Defendor in the mid to late winter and early spring when weeds are young and just beginning active growth. Fall application timings have been particularly effective when targeting perennial broadleaf weeds. Weeds growing in the absence of competition from other vegetation generally require repeat applications to obtain satisfactory control or suppression.

Weeds Controlled	
aster (slender) bittercress, hairy ⁴ burclover burweed, lawn carrot ⁴ , wild Carolina geranium catchweed (bedstraw) cat's ear, common chamomile ⁴ chickweed (common) chickweed (mouseear) ⁴ clover, hop clover, red clover, white cudweed ⁴ dandelion, common ³ dollarweed ² (pennywort) ² false dandelion fleabane ⁴ groundsel ⁴ , common knotweed	medic, black parsley-piert ⁴ shepherd's-purse smartweed ⁴ , Pennsylvania spotted catsear
Weeds Suppressed	
killinga, annual ⁴ and green ⁴	nutsedge, yellow ⁴ Virginia buttonweed ⁴

²Repeat applications may be necessary. If weed recovery occurs, make a 2nd application 4 weeks after the first.

³Specific Use Instructions for Dandelion Control

Late Winter/Early Spring Application: Application should occur prior to or at the initiation of vegetative development of dandelion. Dandelion will be small and may not be visible in the turf canopy at this time. Application at this time will best control dandelion and prevent bloom from occurring. Applications made just prior to or at flower stalk growth initiation will not control bloom and control may be reduced.

Fall Application: Defendor should be applied when high temperatures subside or cool and fall foliage on trees begin to appear (i.e. leaves begin to change color) up to the first hard killing frost. Applications at this time will best control dandelions and prevent bloom the following spring.

⁴ Not registered for use in California

TURFGRASS

Turfgrass Establishment

Defendor may be applied to perennial ryegrass and tall fescue at seeding, early emergence or once established. Applications of this product during establishment of other cool and warm season turfgrass has not been evaluated. Users who choose to apply Defendor to turfgrass, other than perennial ryegrass and tall fescue during establishment and shortly after emergence, may determine the suitability for use by treating a small area at a specified rate. Prior to treatment of larger areas, observe the treated area for any sign of herbicidal injury during 30 days of normal growing conditions to determine if the target turfgrass species is tolerant. Use of this product on turf that has been weakened by weather, pest, disease, chemical, mechanical or other related stress, may result in turf injury.

Established Turfgrass

Defendor may be used on seeded, sodded, or sprigged lawns, ornamental turfgrass and unimproved turfgrass that are well established with the exception of perennial ryegrass and tall fescue as noted under **Turfgrass**

Establishment. Newly established turf must have developed a good root system and a uniform stand, and have received at least two mowings following seeding or sprigging before making the first application of this product. Use of this product on turf that is not well established, or has been weakened by weather, pest, disease, chemical, mechanical or other related stress, may result in turf injury.

Treatment on Turfgrass Species Not Listed on the Label for Defendor

Users who wish to use Defendor on turfgrass species not listed on this label may determine the suitability for use by treating a small area at a specified rate. Prior to treatment of larger areas, observe the treated area for any sign of herbicidal injury during 30 days of normal growing conditions to determine if the target turfgrass species is tolerant.

Precautions

- When applying this product in tank mix combinations, follow all applicable use directions, precautions, and limitations on each manufacturer's label.
- For best results, Defendor used alone or in tank mixes should not sit overnight or for prolonged periods without sufficient agitation prior to use. (Also listed under "Mixing Order for Tank Mixes")
- To minimize the potential for turfgrass injury, do not make additional applications within four weeks of a previous application.

Restrictions

- Do not apply Defendor to golf course putting greens.
- Do not apply Defendor directly to, or otherwise permit Defendor to come into contact with desirable flowers, ornamental shrubs or trees, or other desirable broadleaf plants, as serious injury may occur. Do not permit spray mists containing Defendor to drift onto desirable broadleaf plants.
- Do not allow sprays of Defendor to contact exposed suckers or exposed roots of shallow rooted trees and shrubs or injury may occur.
- Do not use treated clippings for mulch around edible plants.
- Do not apply more than 12 fl oz of Defendor (0.75 pints; 0.039 lb ai florasulam) per acre per year.
- Use this product strictly in accordance with the drift and runoff precautions on this label in order to minimize off-site exposure.
- **Chemigation:** Do not apply this product through any type of irrigation system.

Herbicide Resistance Management

Florasulam is an ALS mode of action Group 2 herbicide. Any weed population may contain or develop plants naturally resistant to this product and other ALS herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance management strategies should be followed.

To delay herbicide resistance:

- For best resistance management stewardship, do not use Defendor more than once per year or rotate the use of Defendor or other ALS herbicides with different herbicide groups that control the same weeds in a turfgrass stand or field.
- Use tank mixes with herbicides from a different group when such use is permitted.
- Base herbicide use on an IPM program that includes scouting, historical information related to herbicide use and crop rotation, and considers tillage (or other mechanical), cultural, biological and other chemical control practices.
- Monitor treated weed populations for resistance development.
- Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment and planting clean seed.
- Contact your local extension specialist or certified crop advisers for any additional pesticide resistance management and/or integrated weed management recommendations for specific crops and weed biotypes.

Application Timing and Rates

Best weed control results are obtained when Defendor is applied to small, actively growing weeds. Extreme growing conditions such as drought or near freezing temperatures prior to, at, or following time of application may reduce weed control. Broadleaf weed species germinate at different times.

Apply Defendor to turfgrass at the rate of 4 fl oz per acre (0.25 pints per acre; 0.09 fl oz per 1000 sq ft; 2.7 ml per 1000 sq ft) as a ground broadcast treatment or spot treatment. Calibrate application equipment prior to use according to manufacturer's directions. Avoid skips or overlaps as poor weed control or plant injury may occur.

Use Defendox on the following established turfgrass species:

Established Cool Season Turfgrass

Common Name	Scientific Name
bentgrass	<i>Agrostis</i> species
bluegrass, Kentucky	<i>Poa pratensis</i>
fescue, chewing	<i>Festuca rubra</i> var. <i>commutata</i>
fescue, creeping red	<i>Festuca rubra</i>
fescue, sheeps	<i>Festuca ovina</i>
fescue, tall ¹	<i>Festuca arundinaceae</i>
ryegrass, perennial ¹	<i>Lolium perenne</i>

Established Warm Season Turfgrass

Common Name	Scientific Name
bahiagrass	<i>Paspalum notatum</i> var. <i>saurae parodi</i>
bermudagrass (common or hybrid)	<i>Cynodon dactylon</i>
centipedegrass	<i>Eremochloa ophiuroides</i>
fescue, tall (growing in warm season areas)	<i>Festuca arundinaceae</i>
kikuyugrass	<i>Pennisetum clandestinum</i>
St. Augustinegrass	<i>Stenotaphrum secundatum</i>
zoysiagrass	<i>Zoysia japonica</i>
zoysiagrass	<i>Zoysia tenuifolia</i>

¹Defendox may be applied to perennial ryegrass and tall fescue at seeding, early emergence or once established. Applications of this product during establishment of other cool and warm season turfgrass has not been evaluated.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather- related factors determine the potential for spray drift. Low humidity and high temperatures increase the evaporation rate of spray droplets and, therefore, the likelihood of increased spray drift. Make applications only when there is little or no hazard from spray drift. The applicator is responsible for considering all of these factors when making the decision to apply this product.

Avoid all direct or indirect contact with non-target plants. Do not apply near desirable vegetation. Allow adequate distance between target area and desirable plants to minimize exposure.

Sensitive Areas: Only apply the pesticide when the potential for drift to adjacent sensitive areas (e.g., bodies of water, known habitat for threatened or endangered species, non-target plants) is minimal (e.g., when wind is blowing away from the sensitive areas).

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, to the extent permitted by law, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitations of Remedies.

Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject

to the inherent risks set forth below. TO THE EXTENT PERMITTED BY LAW, Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used.

To the extent permitted by law, Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. To the extent permitted by law, in no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitation of Remedies in any manner.

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