



Katana®

TURF HERBICIDE

ACTIVE INGREDIENT:	By Wt.
Flazasulfuron*	25.0%
OTHER INGREDIENTS:	75.0%
	TOTAL 100.0%

*N-[[[4,6-dimethoxy-2-pyrimidinyl] amino]carbonyl]-3-(trifluoromethyl)-2-pyridinesulfonamide.
Contains 0.25 pounds active ingredient per pound of formulated product.

KEEP OUT OF REACH OF CHILDREN CAUTION

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 some one to explain it to you in detail.)

READ ENTIRE LABEL CAREFULLY AND USE ONLY AS DIRECTED.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION: Harmful, if swallowed or absorbed through skin. Avoid contact with skin, eyes or clothing.

First Aid	
If swallowed:	<ul style="list-style-type: none"> • Call a poison control center or doctor for treatment immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled:	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOT LINE NUMBER: For 24-Hour Medical Emergency Assistance call 1-877-800-5556.	

Personal Protective Equipment (PPE)

Applicators and other handlers must wear: long-sleeved shirt and long pants, shoes plus socks, protective eyewear and chemical resistant gloves made of any waterproof material.

User Safety Requirements

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.

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.
 - Users should remove PPE immediately after handling the product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into 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 cleaning equipment or disposing of equipment wash waters or rinsate.

This product may contaminate water through drift of spray in wind, or drift of soil from treated areas. This product has a high potential for runoff for several weeks after application. Poorly drained soils and soils with shallow water tables are more prone to produce runoff that contains this product. Avoid applying this product to ditches, swales, and drainage ways. Runoff of this product would be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours.

There is potential for injury to sensitive plants irrigated with run-off water containing flazasulfuron.

No bee caution required.

Physical or Chemical Hazards

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

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

Agricultural Use Requirements

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

Do not enter or allow worker entry into treated areas during the **Restricted Entry Interval (REI)** of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: Coveralls, chemical-resistant gloves made of any waterproof materials, and shoes plus socks.

Sod and seed farms are within the scope of the Worker Protection Standard.

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. Turf grasses on golf courses, residential sites and other turf areas such as industrial parks, tank farms, professionally managed sports fields and commercial lawns are not within the scope of the Worker Protection Standard. Do not enter or allow others to enter the treated area until sprays have dried.

Use Information

Katana® Turf Herbicide is a selective herbicide for removal of overseeded cool-season grasses as well as control of annual and perennial grasses, sedges, and broadleaf weeds in Bermudagrass, zoysiagrass, buffalograss, centipedegrass, seashore paspalum, and certain other warm-season turfgrasses. This product has post-emergence and some pre-emergence activity. Katana Turf Herbicide may be used on golf courses (fairways, roughs, and tees) and the following turf areas: industrial parks, tank farms, sod farms, seed farms, cemeteries, professionally managed sports fields, commercial turf, and residential turf, limited to targeted, directed spray to weeds only (See specific limitations under "Application Restrictions") for control of cool season grasses and weeds from tolerant grasses.

Weed growth stops within hours after the application, however symptom progress from discoloration or chlorosis to necrosis generally requires from 3 to 6 weeks. Speed of control is generally a function of weather with faster action during warmer weather and actively growing weeds and turf.

Katana Turf Herbicide controls weeds by inhibiting the acetolactate synthase (ALS) biochemical process. Some weeds may contain naturally occurring populations that are resistant to ALS inhibiting herbicides. Applications of ALS inhibiting herbicides, when used alone, over a period of time may lead to biotypes that are resistant to ALS herbicides. This then leads to a reduction in the level of control obtained through the use of these herbicides. To prevent or delay the build-up of ALS resistant weeds, weed management programs should include the use of appropriate registered herbicides for control of these weeds that have a different mode of action. Applications of herbicides with a different mode of action should be used during the same year or in sequential years.

Application Restrictions

- Do not apply Katana Turf Herbicide aerially.
- Do not apply Katana Turf Herbicide through any irrigation system.
- Repeat applications may be made at 2 to 6 weeks after the application for optimum weed control.
- The maximum yearly application rate is 9.0 oz. per acre (0.14 lbs a.i./acre).
- Use only on turfgrasses listed below (unless listed under weeds controlled) or severe injury may result.
- Do not apply to new seeded, sodded or sprigged turfgrass until well established.
- Allow at least 2 weeks from the last application to the time of overseeding when applied at 1.5 oz./A. Allow 4 weeks for rates above 1.5 oz./A.

- Do not plant back another crop (other than turfgrass) in Katana Turf Herbicide treated areas for one year.
- Do not use on golf course putting greens.
- Some ornamental shrubs, plants and trees may be sensitive to Katana Turf Herbicide. Do not make applications that would result in direct contact or accumulation under the dripline of sensitive plants.
- Do not use fresh clippings from treated areas as mulch around trees, shrubs, or in vegetable/flower gardens.
- Do not apply when grasses are under stress as injury may occur.
- Make applications to actively growing weeds and turf.
- Do not apply to saturated turf/soils.
- Do not apply to hydrophobic soils or turfgrass with excessive thatch accumulation, unless thorough aeration has been completed prior to application.
- Maintain a 25 foot buffer between sensitive grasses/plants and the treated area.
- Do not apply this product directly to, or otherwise permit drift or spray mist to come into contact with cotton, legumes, tobacco, garden/vegetable crops, flowers, ornamental plants, shrubs, trees, and other desirable or sensitive plants. Do not apply to exposed roots or shallow rooted trees and shrubs. Be particularly careful not to over-dose under the dripline of trees.

Use Precautions Around Sensitive Grasses

- Use extreme caution when applying this product to slopes that drain onto sensitive turf grasses such as bentgrass, ryegrass, and Poa trivialis.
- The product should be dry on the leaf surface prior to allowing traffic on the treated area.
- Irrigation is not recommended within 6 hours after the application. However, for the next two mornings after application, if dew is present, irrigate lightly (0.1 to 0.2 inches) to remove the dew.

Spray Drift Management

- The applicator must be familiar with the effects of temperature inversions.
- Apply as a medium or coarser spray (ASABE Standard 572).
- AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR AND GROWER. The interaction of many equipment and-weather related factors determines the potential for spray drift. The applicator is responsible for considering all of these factors when making decisions. Where states have more stringent regulations, they must be observed.
- Do not treat areas where either possible downwind movement into the soil or surface washing may cause contact of Katana Turf Herbicide with bentgrass greens and stressed grasses.
- Avoid making applications when spray particles may be carried by air currents to areas where sensitive crops and plants are growing. Do not spray near sensitive plants if wind is gusty, below 2 mph, or in excess of 10 mph and moving in the direction of adjacent areas of sensitive crops or plants. Do not apply during temperature inversions. Always make applications when there is some air movement to determine the direction and distance of possible spray drift. Leave an adequate buffer zone of 25 feet between area to be treated and sensitive plants.
- To avoid injury to desirable plants, equipment used to apply Katana Turf Herbicide should be thoroughly cleaned (see PROCEDURE FOR CLEANING SPRAY EQUIPMENT) before reusing to apply any other chemicals.
- Apply using a nozzle height of no more than 2 feet above the ground or crop canopy.

INFORMATION ON DROPLET SIZE

The best drift management strategy is to apply large droplets and to limit or eliminate small droplets. Applying large droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see sections below).

CONTROLLING DROPLET SIZE

- Volume - Use sufficient volume to form droplets large enough to avoid drift potential.
- Pressure - Pressure and nozzle type and orientation should be carefully managed to avoid formation of fine droplets.
- Number of nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Properly designed solid stream nozzles should produce the lowest drift potential. Select nozzles, which do not have a wide discharge profile.

CALIBRATION

Equipment should be calibrated regularly according to the manufacturer's specifications.

WIND

Applications must not be made when wind speed exceeds 10 mph. Use caution when applying in wind speeds less than 2 to 3 mph because a temperature inversion may be present and wind direction may vary. Many factors, including droplet size and equipment, determine drift potential at any wind speed. The applicator must be familiar with local wind patterns and must monitor wind conditions at the site at time of application.

SENSITIVE AREAS

It is the applicator's responsibility to exercise reasonable prudence when considering the potential for drift into any area, including sensitive areas (e.g. areas where people or non-target plants may be present, bodies of water, known habitat for threatened or endangered species, etc.).

TEMPERATURE AND HUMIDITY

Low humidity and high temperature increase the evaporation rate of droplets and therefore increase spray drift potential. The applicator should compensate for temperature and humidity.

TEMPERATURE INVERSIONS

Because of high drift potential, applications must not be made when droplets may reach a temperature inversion layer. **It is the applicator's responsibility to identify the presence of a temperature inversion at the time of application.** Accurate measurements of temperature, relative humidity, and wind speed help determine if an inversion exists. Local sources of weather information may help identify the presence of temperature inversions.

Mixing and Loading Instructions

Ensure the spray system is clean and free of residues from previous applications. Fill the spray tank 1/2 full with clean water. Ensure the agitation system is operating and sufficient to provide uniform spray mixing during application and until the spray tank has been emptied. Add the appropriate amount of this product to the spray tank. Complete filling the spray tank to the desired level.

Prepare no more spray mixture than is needed for the immediate application. Avoid the overnight storage of Katana Turf Herbicide spray mixtures.

Tank Mixtures

Katana Turf Herbicide may be tank mixed with most herbicides registered for use on labeled turfgrasses. Read and follow all manufacturer's label directions and restrictions for the companion product. Katana Turf Herbicide is generally compatible with other insecticides (non-organophosphate), fungicides, fertilizers and micronutrient products provided sufficient free water is available for dispersion of all the tank mix products. However, the physical compatibility of Katana Turf Herbicide with tank mix partners should be evaluated before use. Use tank-mix combinations only when applicator experience indicates that the tank mix will not result in objectionable turf injury.

The following have shown improved weed control in tank mixtures: Speedzone®, Trimec® Classic and Trimec® Plus, MSMA, 2,4-D Amine, Sencor®, Drive®, Pendimethalin.

For tank mixtures, add individual components to the spray tank in the following sequence: water, water dispersible granules (this product), water-soluble bags, dry flowables, emulsifiable concentrates, drift control additives, water-soluble liquids, and nonionic surfactants

Adjuvant Use Requirements

The use of a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) provides maximum performance.

Spray Equipment Clean Out:

After spraying Katana Turf Herbicide and before using sprayer equipment for any other applications, the sprayer must be thoroughly cleaned using the following procedure.

1. Drain tank; thoroughly rinse inside of spray tanks with clean water (rinse about 1 minute per 25 gallons of tank capacity). Loosen and physically remove any visible deposits with a stiff brush.
2. Fill the tank with clean water and add 1 gallon of household ammonia (contains 3% active) for every 100 gallons of water. Circulate the cleaning solution through the tank and hoses for at least 15 minutes. Flush the cleaning solution through the hoses, boom and nozzles (1/4 volume of tank capacity) and then drain the tank.
3. Repeat step 1.
4. Repeat step 2.
5. Remove the nozzles and screen and clean separately in a bucket containing cleaning agent and water.
6. Rinse the tank, boom and hoses with clean water.
7. If only ammonia is used as a cleaner, the rinsate solution from both steps 2 and 4 may be applied back to the crop as recommended on the label. Do not exceed the maximum label use rate. If other cleaners are used, consult the cleaner label for rinsate disposal instructions. If no instructions are given, dispose of the rinsate on site or at an approved waste disposal facility.
(Attention: Do Not use Chlorine bleach with ammonia as a dangerous gas will form).

Application Information

All Specified Application Sites Except Residential Turfgrass

Rainfastness: Rainfall of one inch or greater within 3 hours of application to sensitive weeds and within 6 hours of application to less sensitive or larger weeds may necessitate reapplication of Katana Turf Herbicide or may result in reduced weed control.

Broadcast: Katana Turf Herbicide may be applied as a broadcast treatment in a minimum of 20 gallons of water per acre. Higher spray volumes of 60 to 174 gallons of water per acre are recommended where weed populations are dense or with adverse growing conditions. See below for use rates.

Spot Treatments With Backpack Sprayers: Dissolve 0.03 to 0.068 oz. (1 to 2 grams) of Katana Turf Herbicide per 1 gallon of water, add 1 teaspoon of a nonionic surfactant and spray mixture at a rate of 1 gallon per 1000 sq. ft. If needed for hard-to-control weeds, retreat in 3-4 weeks. (See specific weed application rates below).

Residential Turfgrass Application Sites

Residential turfgrass sites are limited to targeted or spot treatment with the spray directed to the weeds. Spot treatments are limited to not more than 10% of a residential lawn.

Spot Treatments with Backpack Sprayers: Dissolve 0.03 to 0.068 oz (1-2 grams) of Katana Turf Herbicide per 1 gallon of water, add 1 teaspoon of a nonionic surfactant and spray mixture at a rate of 1 gallon per 1,000 sq. ft. If needed for hard-to-control weeds, retreat in 3-4 weeks. (See specific weed application rates below).

Turfgrass Species which may be Treated
Bermudagrass, Buffalograss, Zoysiagrass, Centipedegrass,
Seashore Paspalum, and Certain Other Warm-Season Turfgrasses*

Turf Tolerance Katana Turf Herbicide may be used on the following warm-season established turfgrass cultivars:
Bermudagrass* : Champion, Common, Midiron, MS Express, MS Supreme, Princess, Quickstand, Riviera, Sahara, TifSport, Tifway 419, TifGreen 328, Vamont, Yukon. NOTE : Unacceptable injury may occur on FloraDwarf, TifDwarf and TifEagle.
Buffalograss*
Zoysiagrass* : Common, Emerald, El Toro, Meyer.
Centipedegrass : Maximum use rate of 1.5 oz./A (0.02 lbs. a.i./acre) to fully green, actively growing turf. Do not apply during spring and fall transition.
Seashore Paspalum** : For weed control, seedhead suppression and growth suppression, use a maximum rate of 1.5 oz./A to fully green, actively growing turf. Do not apply during spring and fall transition. <ul style="list-style-type: none"> • Expect some turf discoloration approximately 2 weeks after application • Expect up to 80% seedhead suppression and expect growth suppression (60 to 80% clipping reduction) for up to 4 weeks. Actual results will depend upon environmental conditions before, during and after application • Wait at least 4 weeks between applications • Maximum of three (3) applications per year • The use of Katana Turf Herbicide with urea based fertilizer may result in unacceptable injury to seashore paspalum. • Maintain healthy turfgrass before and after applications • Always irrigate stressed turf prior to application of Katana Turf Herbicide. Tank-mixing with trinexapac-ethyl (Primo MAXX®) during active growth may improve Seashore Paspalum quality (golf course fairways).
*Other cultivars should be tested on a small area to determine tolerance prior to large scale use. **All cultivars should be tested on a small area to determine tolerance prior to large scale use.
Other warm-season grasses such as Argentine Bahiagrass, Carpetgrass, and St. Augustinegrass are intolerant.
Cool-season grasses such as Ryegrass, Fescue, Bentgrass and Kentucky Bluegrass are intolerant.

Removal of overseeded cool-season turfgrass from listed warm-season turfgrasses			
Species Controlled	Product Application Rate Ounces per 1,000 sq. ft.	Product Application Rate Ounces per acre	Spray Volume
Perennial ryegrass	0.011 to 0.034	0.5 to 1.5	20 to 174 gal/Acre or 0.46 to 4 gal/ 1000 sq. ft.
Italian (annual) ryegrass	0.034	1.5	
<i>Poa trivialis</i>	0.051 to 0.068	2.25 to 3.0	
Note: Applications for spring transition do not negatively impact Bermudagrass greenup. Katana Turf Herbicide shows a slight rate response with control occurring within 3 to 4 weeks after the application with the highest labeled rate giving better and faster control. Therefore, the Bermudagrass or zoysiagrass turf should be at 50 to 60% greenup at the time of the application for optimal maintenance of a green turf situation. Adjuvant Use Requirements The use of a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) provides maximum performance.			

Instructions for Specific Weed Control Situations

Removal of volunteer cool-season grasses from listed warm-season turfgrasses			
Species Controlled	Product Application Rate Ounces per 1,000 sq. ft.	Product Application Rate Ounces per acre	Spray Volume
Volunteer Ryegrass (clumpy ryegrass)	0.034 to 0.068	1.5 to 3.0	20 to 174 gal/Acre or 0.46 to 4 gal/ 1000 sq. ft.
Tall Fescue	0.034	1.5	
Katana Turf Herbicide shows a slight rate response with the highest labeled rate giving better and faster control. Adjuvant Use Requirements The use of a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) provides maximum performance.			

Removal of Kyllingias and Sedges from listed warm-season turfgrasses			
Species Controlled	Product Application Rate Ounces per 1,000 sq. ft.	Product Application Rate Ounces per acre	Spray Volume
Kyllingias (green, false-green, cockscomb and fragrant)	0.034 to 0.051	1.5 to 2.25	20 to 174 gal/Acre or 0.46 to 4 gal/ 1000 sq. ft.
Sedges (annual, globe, and yellow nutsedge)*	0.034 to 0.068	1.5 to 3.0	
Sedges: (purple nutsedge, cylindrical and rice flatsedge)**	0.068	3.0	
*Repeat applications at 4 weeks may be necessary for new growth and consistent, long-term control. **Repeat applications at 4 weeks are necessary for new growth and consistent, long-term control. Adjuvant Use Requirements The use of a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) provides maximum performance.			

Removal of annual bluegrass (<i>Poa annua</i>) from listed warm-season turfgrasses			
Katana Turf Herbicide + Urea Nitrogen (46-0-0) Katana Turf Herbicide can be used at reduced rates when applied in conjunction with urea nitrogen*. The nitrogen should be in the form of urea 46-0-0 for improved control of <i>Poa annua</i> . 1. Apply soluble urea fertilizer in a tank-mix with Katana Turf Herbicide. OR 2. Apply as a granular urea fertilizer within 1 day before or within 1 day after application of Katana Turf Herbicide.			
Product	Product Application Rate Ounces per 1,000 sq. ft.	Product Application Rate Ounces per acre	Spray Volume
Katana Turf Herbicide + Urea (46-0-0)	0.023 to 0.034 oz + 0.54 to 1.63 lb of urea per 1000 sq.ft. (or 0.25 to 0.75 lb actual N)	1.0 to 1.5 oz/acre + 24 to 71 lb of urea per acre (or 11 to 33 lb actual N)	20 to 174 gal/Acre or 0.46 to 4 gal/ 1000 sq. ft.
Adjuvant Use Requirement: Katana Turf Herbicide plus nitrogen mixes must be applied with a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) to provide maximum performance. Adjuvant Use Requirements The use of a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) provides maximum performance. *Seashore paspalum: The use of Katana Turf Herbicide with urea based fertilizer may result in unacceptable injury to seashore paspalum.			

Katana Turf Herbicide used <i>without</i> urea nitrogen			
Species Controlled	Product Application Rate Ounces per 1,000 sq. ft.	Product Application Rate Ounces per acre	Spray Volume
Annual Bluegrass (<i>Poa annua</i>)	0.068	3.0	20 to 174 gal/Acre or 0.46 to 4 gal/ 1000 sq. ft.
Applications made in the spring provide the best control. Applications made in the fall or winter seasons are slightly less effective. Adjuvant Use Requirements The use of a non-ionic surfactant at 0.25 percent by volume (1 qt/100 gal) provides maximum performance.			

Rate Table For Weed Control (Quick-view)

Katana Turf Herbicide may be applied at rates from 1.5 to 3.0 oz/A for control of a large number of grass, sedge and broadleaf weeds. Broadcast applications must not exceed 0.068 oz per 1000 sq. ft. or 3.0 oz/A per application, with a maximum of three applications per season (9.0 oz. of product/season or 0.14 lbs. a.i./acre). Some difficult to control weeds may require multiple applications. For best control apply Katana Turf Herbicide to grass and sedge weeds prior to initial tillering and when broadleaf weeds are young and actively growing.

Weed Species Controlled	Product Application Rate Ounces per 1,000 sq. ft.	Product Application Rate Ounces per acre	Spray Volume Gallons per acre
American burnweed	0.034	1.5	20 to 174 gal/Acre or 0.46 to 4 gal/ 1000 sq. ft.
Barnyardgrass	0.068	3.0	
Black medic	0.034	1.5	
Blue-eyed grass	0.034	1.5	

(cont. on next page)

