



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

January 8, 2021

Lisa Adamson
Regulatory Manager
Control Solutions, In.,
5903 Genoa- Red Bluff
Pasadena, TX 77507-1041

Subject: Label Amendment – Update label per ID changes.
Product Name: MSM Turf Herbicide
EPA Registration Number: 53883-430
Application Date: 07/09/2019
Decision Number: 553634

Dear Ms. Adamson:

The amended label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, is acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. 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 18 months from the date of this letter. After 18 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.

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.

Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance

Page 2 of 2
EPA Reg. No. 52883-430
Decision No. 553634

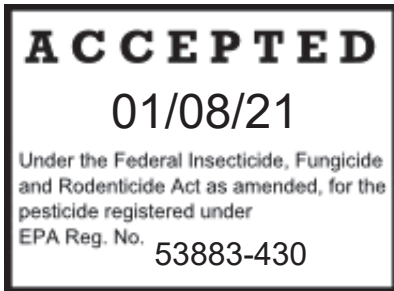
with FIFRA section 6. If you have any questions, please contact Francisco Llarena-Arias by phone at 703-347-0459, or via email at llarena-arias.francisco@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Jordan Page", is written over a light gray rectangular background.

Jordan Page, Product Manager 24 (Acting)
Fungicide and Herbicide Branch
Registration Division (7505P)
Office of Pesticide Programs

Enclosure



METSULFURON-METHYL	GROUP	2	HERBICIDE
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MSM Turf Herbicide

ACTIVE INGREDIENT:	% BY WT.
Metsulfuron Methyl	
Methyl 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-amino]carbonyl]amino]sulfonyl]benzoate.....	60.0%
OTHER INGREDIENTS:	40.0%
TOTAL:	100.0%

Contains 0.0375 lbs. of Metsulfuron methyl per oz. of water dispersible granules.



ADAMA

Consumer &
Professional
Solutions

Manufactured for:
Control Solutions, Inc.
5903 Genoa Red Bluff
Pasadena, TX 77507

EPA Reg. No: 53883-430
EPA Est. No: _____
Net Contents: _____ OZ

KEEP OUT OF REACH OF CHILDREN CAUTION

FIRST AID

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 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.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact PROSAR at 1-877-250-9291 for emergency medical treatment information.

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes and socks
- Chemical-resistant gloves made from materials such as barrier laminate, butyl rubber, natural rubber, neoprene rubber, nitrile rubber, polyethylene, polyvinyl chloride (PVC) or viton.

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

ENGINEERING CONTROL STATEMENTS

When handlers use closed systems, 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.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "Applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

USER SAFETY RECOMMENDATIONS

Users should:

- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

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** apply where runoff water may flow during periods of intense rainfall or to water-saturated soils, as off-target movement and injury may occur. **DO NOT** contaminate water when cleaning equipment or disposing of equipment washwaters. **DO NOT** apply this product through any type of irrigation system.

Groundwater Advisory: Metsulfuron methyl 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.

Surface Water Advisory: This product may impact surface water quality due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having high potential for reaching surface water via runoff for weeks after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of Metsulfuron methyl from runoff water and sediment. Runoff of this product will be greatly reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. **READ ENTIRE LABEL BEFORE USING THIS PRODUCT. USE STRICTLY IN ACCORDANCE WITH LABEL PRECAUTIONARY STATEMENTS AND DIRECTIONS.**

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 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is: coveralls, shoes, socks and chemical-resistant gloves including butyl rubber, natural rubber, neoprene rubber, or nitrile rubber.

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. **DO NOT** enter treated areas without protective clothing until sprays have dried.

(Note to label editor: the statement below is a voluntary state specific restriction added that may be dropped at such time that Arizona allows use of Mesulfuron Methyl on agricultural uses)

State Specific Restrictions:

The state of Arizona has not approved this product for use on agricultural sites. **DO NOT** use this product on uses considered by the Arizona statutes to be agricultural uses.

SPRAYER CLEANUP

Immediately after spraying, thoroughly remove all traces of MSM Turf Herbicide from mixing and spray equipment as follows:

- 1) Drain tank, rinse interior surface of tank, then flush tank, boom and hoses with clean water for a minimum of 5 minutes.
- 2) Fill the tank with clean water, then add an ammonia cleaning solution. Use one gallon ammonia (containing 3% active) per 100 gallons of water. Turn on sprayer long enough to flush through boom, hoses and nozzles. Stop spraying, but keep agitator working in the tank for 15 minutes, then drain.
- 3) Repeat Step 2.
- 4) Repeat Step 1.
- 5) Nozzles and screens must then be removed and cleaned separately. To remove traces of cleaning solution, rinse the tank thoroughly with clean water and flush through hoses and boom.
- 6) Flush boom and hoses with clean water for 5 minutes just prior to using the sprayer for the first time after the MSM Turf Herbicide application.

WEED RESISTANCE MANAGEMENT

METSULFURON-METHYL	GROUP	2	HERBICIDE
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For resistance management, MSM Turf Herbicide is a Group 2 herbicide. Any weed population may contain or develop plants naturally resistant to MSM Turf Herbicide and other Group 2 herbicides. The resistant biotypes may dominate the weed population if these 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 MSM Turf Herbicide or other Group 2 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- 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 used 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.
- Scout before and 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, if available.
- Contact your local extension specialist or certified crop advisors for additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- Report any incidence of non-performance of this product against a particular weed species to Control Solutions, Inc., your local retailer or your local extension specialist. If resistance is suspected, treat weed escapes with a herbicide having a different mechanism of action and/or use non-chemical means to remove escapes, as practical, with the goal of preventing further seed production.

BEST MANAGEMENT PRACTICES

Proactively implementing diversified weed control strategies to minimize selection for weed populations resistant to one or more herbicides is advised. A diversified weed management program may include the use of multiple herbicides with different modes of action and overlapping weed spectrum with or without tillage operations and/or other cultural practices. Research has demonstrated that using the labeled rate and directions for use is important to delay the selection for resistant weeds. Scouting after herbicide application is important because it can facilitate the early identification of weed shifts and/or weed resistance and thus provide direction on future weed management practices. One of the best ways to contain resistant weed populations is to implement measures to avoid allowing weeds to reproduce by seed or to proliferate vegetatively. Cleaning equipment between sites and avoiding movement of plant material between sites will greatly aid in reducing the spread of resistant weed seed.

MANDATORY SPRAY DRIFT

Aerial Applications:

- **DO NOT** release spray at a height greater than 10 ft. above the vegetative canopy, unless a greater application height is necessary for pilot safety.
- For applications prior to the emergence of crops and target weeds, applicators are required to use a Coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a Medium or coarser droplet size (ASABE S572.1).
- The boom length must not exceed 65% of the wingspan for airplanes or 75% of the rotor blade diameter for helicopters.
- Applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

Ground Boom Applications:

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy unless making a turf, pasture, or rangeland application, in which case applicators may apply with a nozzle height no more than 4 feet above the ground.
- For applications prior to the emergence of crops and target weeds, applicators are required to use a Coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a Medium or coarser droplet size (ASABE S572.1).
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

Boom-less Ground Applications:

- Applicators are required to use a Medium or coarser droplet size (ASABE S572.1) for all applications.
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **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.

Boom-less Ground Applications: Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

Handheld Technology Applications: Take precautions to minimize spray drift.

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.

Controlling Droplet Size – Aircraft:

- Adjust Nozzles - Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

BOOM HEIGHT – Ground Boom: Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

RELEASE HEIGHT – Aircraft: Higher release heights increase the potential for spray drift. When applying aerially to crops, do not release spray at a height greater than 10 feet above the crop canopy, unless a greater application height is necessary for pilot safety.

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 are 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.

NON-TARGET ORGANISMS 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 area. Protect the forage and habitat of non-target organisms by minimizing spray drift. For further guidance and instructions on how to minimize spray drift, refer to the Spray Drift Management section of this label.

WINDBLOWN SOIL PARTICLES ADVISORY

MSM Turf Herbicide has the potential to move off-site due to wind erosion. Soils that are subject to wind erosion usually have a high silt and/or fine to very fine sand fractions and low organic matter content. Other factors which can affect the movement of windblown soil include the intensity and direction of prevailing winds, vegetative cover, site slope, rainfall, and drainage patterns. Avoid applying [insert product name] if prevailing local conditions may be expected to result in off-site movement.

TURF, INCLUDING LAWNS, PARKS, CEMETERIES, AND GOLF COURSES (FAIRWAYS, APRONS, TEES AND ROUGHS) - NON-AGRICULTURAL USE SOD FARMS - AGRICULTURAL USE

Controls the following perennial and annual weedy grasses:

Bahiagrass Foxtail Ryegrass

Controls the following broadleaf (dicot) weeds:

Annual sowthistle	Henbit
Aster	Hoary cress (whitetop)
Bittercress	Kochia
Blue mustard	Lambsquarters
Buckhorn	Miners lettuce
Bur buttercup	Pennsylvania smartweed
Canada thistle	Plantain
Chicory	Prickly lettuce
Clover (white)	Prostrate knotweed
Common chickweed	Redroot pigweed
Common groundsel	Redstem filaree
Common mullein	Shepherdspurse
Common purslane	Smallseed flaxweed
Common sunflower	Smooth pigweed
Common yarrow	Spurge (prostrate)
Conical catchfly	Sweet clover
Cow cockle	Tansy mustard
Crown vetch	Treacle mustard
Curly dock	Tumble mustard
Dandelion	Virginia buttonweed
Dogfennel	Wild carrot
False chamomile	Wild celery
Fiddleneck tarweed	Wild lettuce
Field pennycress	Wild mustard
Flixweed	Wild onion
Goldenrod	Woodsorrel (oxalis)

For use only on Kentucky Bluegrass, Fine Fescue, Bermudagrass, Centipedegrass, Zoysiagrass and St. Augustinegrass turf areas.

Use lowest rates for minimum chlorosis of the turf.

USE RESTRICTIONS

- **DO NOT** apply MSM Turf Herbicide to turf under stress from drought, insects, disease, cold temperatures, high temperatures of above 85°F on cool season grasses, or poor fertility as injury may result.
- **DO NOT** apply to turf less than 1 year old.
- **DO NOT** use on Bahiagrass where it is the desired turf, as severe injury may result.
- **DO NOT** apply more than 4 oz product per acre (0.15 lbs. a.i./acre) in a single application.

- **DO NOT** apply more than 4 oz. product (0.15 lbs. a.i.) per acre per year.
- **DO NOT** apply more than 0.15 lbs. a.i. metsulfuron-methyl per acre per year when using any combination products containing metsulfuron-methyl.
- **DO NOT** plant ornamentals including shrubs and trees in treated areas for at least 1 year after the last application, or bedding plants for at least 2 years.
- **DO NOT** apply in areas where tree roots may be directly contacted due to poor turf density or shallow soil profiles.
- **DO NOT** apply to semi-dormant St. Augustinegrass or during periods of slower growth.

IMPORTANT

Addition of a nonionic surfactant of at least 80% active ingredient at 0.25 percent by volume (1 qt./100 gal) provides maximum performance but may temporarily increase chlorosis of the turf.

When an adjuvant is to be used with this product, Control Solutions, Inc. suggests the use of a Council of Producers and Distributors of Agrotechnology certified adjuvant.

Allow one week between the application of MSM Turf Herbicide and other pesticide products. (This guideline can be relaxed where severe insect or disease attack requires immediate treatment).

DO NOT USE ON FOOD OR FEED CROPS. Injury to or loss of desirable trees or other plants may result from failure to observe the following: **DO NOT** apply MSM Turf Herbicide (except as directed) or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend or in locations where the chemical may be washed or moved into contact with their roots.

When overseeding, wait 2 months (8 weeks) after application. **DO NOT** apply to any body of water, including streams, irrigation water or wells. **DO NOT** apply where runoff water may flow onto agricultural land, as injury to crops may result.

DO NOT allow spray drift onto adjacent crops or other desirable plants or trees as injury may occur. See SPRAY DRIFT box.

HOW TO USE

Use spray volumes of 20 to 80 gal/acre and pressures of 25 to 35 psi at the following rates of MSM Turf Herbicide from the weeds listed below:

0.125 TO 0.25 OZ PRODUCT/ACRE (0.0047 TO 0.0094 LBS. A.I./ACRE)

Ryegrass (greens)

0.25 TO 0.33 OZ PRODUCT/ACRE (0.0094 TO 0.012 LBS. A.I./ACRE)

Bittercress	Field pennycress
Blue mustard	Ground ivy (Fall)
Bur buttercup	Parsley-piert
Chickweed	Prostrate spurge
Chicory	Redstem filaree
Clover (white)	Spurweed
Creeping beggarweed	Wild carrot
Dandelion	

0.33 TO 0.5 OZ PRODUCT/ACRE (0.012 TO 0.0188 LBS. A.I./ACRE)

Annual sowthistle	Ryegrass (fairways)
Aster	Seedling dogfennel
Carolina geranium	Shepherdspurse
Common yarrow	Smooth pigweed
Crown vetch	Smallseed falseflax
Florida betony	Sweet clover
Ground ivy (Spring*)	Tansy mustard
Henbit	Treacle mustard

Lambsquarters	Tumble mustard
Lespedeza	Wild celery
Miners lettuce	Wild garlic
Plantain	Wild lettuce
Prickly lettuce	Wild onion
Ragweed	Woodsorrel (oxalis)
Redroot pigweed	

0.25 TO 0.75 OZ PRODUCT/ACRE (0.0094 TO 0.028 LBS. A.I./ACRE)

Bahiagrass*

0.5 TO 1 OZ PRODUCT/ACRE (0.0188 TO 0.0375 LBS. A.I./ACRE)

Brazil pusley	Florida pusley
Buckhorn plantain	Foxtail
Canada thistle**	Hoary cress (whitetop)
Curly dock	Kochia
Common groundsel	Pennsylvania smartweed
Common purslane	Plantain
Common sunflower	Prostrate knotweed
	Sida (southern)
Dogfennel	Virginia buttonweed***
Dollarweed*	Wild mustard

* A repeat application may be required in 4 to 6 weeks.

** Suppression only involving a visual reduction in competition compared to an untreated area.

*** Controls seedling Virginia buttonweed. Suppression only of more mature plants. Repeat application may be required in 4 to 6 weeks.

The required amount of MSM Turf Herbicide is advised to be added when the spray tank is half full of water with agitator running. Once mixed, add water to bring to final desired spray volume. Continuous agitation is required to keep the product in suspension.

Spray preparations of this product may degrade in acid solutions if not used in 24 hours; it is stable in alkaline solutions. Thoroughly re-agitate before using.

Tank mixes with other registered herbicides are advised to be tested for compatibility before full scale mixing. Use mechanical or bypass agitation to thoroughly mix the spray suspension. It is not necessary to pre-mix this product with water in a separate container prior to adding it to the spray tank. This product must always be added to the tank first, before any other herbicides or adjuvants. 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.

Kentucky Bluegrass and Fine Fescue: Apply 0.25 to 0.5 oz of MSM Turf Herbicide (0.0094 to 0.0188 lbs. a.i.) per acre for control of the listed weeds. **DO NOT** exceed a total of 0.5 oz per acre within a 9-month period.

St. Augustinegrass and Bermudagrass: Apply 0.25 to 1.0 oz of MSM Turf Herbicide (0.0094 to 0.0375 lbs. a.i.) per acre for weed control. Some chlorosis or stunting of the turfgrass may occur following application.

Zoysiagrass (including but not limited to Meyers and Emerald varieties): Apply 0.25 to 0.5 oz of MSM Turf Herbicide (0.0094 to 0.01875 lbs. a.i.) per acre for weed control. Some chlorosis or stunting of the turfgrass may occur following application.

Precaution: Sensitivity of the majority of cultivars of Zoysiagrass to MSM Turf Herbicide has not been fully investigated. It is known that Emerald, Zenith, and Meyer cultivars of Zoysiagrass have shown sensitivity similar to that of bermudagrass. The effects of MSM Turf Herbicide on these turfgrasses during transition have not been fully evaluated

Bahiagrass Control: For the selective control of Bahiagrass in Bermudagrass turf, use 0.25 to 0.75 oz of MSM Turf Herbicide (0.0094 to 0.028 lbs. a.i.) per acre. Use the higher rates of the range on Argentine, Common and Paraguayan Bahiagrass. Apply a repeat treatment in 4 to 6 weeks if necessary. Some chlorosis or stunting of the Bermudagrass may occur following the application.

Centipedegrass: Apply 0.25 to 0.5 oz of this product (0.0094 to 0.0188 lbs. a.i.) per acre for weed control. Some chlorosis or stunting of the turfgrass may occur following the application.

IMPORTANT: Addition of a nonionic surfactant of at least 80% active ingredient at 0.25 percent by volume (1 qt/100 gal) provides maximum performance but may temporarily increase chlorosis of the turf.

Allow one week between the application of MSM Turf Herbicide and other pesticide products. (This guideline can be relaxed where a severe insect or disease attack requires immediate treatment.)

AGRICULTURAL USES CONIFER PLANTATIONS

Application Information

MSM Turf Herbicide is used to control many species of weeds and deciduous trees on sites where conifers are growing or are to be planted. Apply by ground equipment or by air (helicopter only). Refer to the “Weeds Controlled” and “Brush Species Controlled” for a listing of susceptible species.

Application Timing

Apply MSM Turf Herbicide after weeds have emerged or after undesirable hardwoods have broken winter dormancy and have reached the point of full leaf expansion.

Conifer Site Preparation

Application Before Transplanting

After consulting the “Weeds Controlled” and “Brush Species Controlled” tables apply the rates of MSM Turf Herbicide specified for the most difficult to control species on the site.

Southeast--Apply up to 4 oz product (0.15 lbs. a.i.) per acre for loblolly and slash pines. Transplant the following planting season.

Northeast and Lake States--Apply up to 2 oz product (0.075 lbs. a.i.) per acre for red pine. Transplant the following planting season. Apply up to 2 ounces per acre for black, white and Norway spruce. Transplant the following spring.

West--Apply up to 2 oz product (0.075 lbs. a.i.) per acre prior to planting Douglas fir, Sitka Spruce, Western Red Cedar, Western Hemlock, Ponderosa Pine, and Grand Fir in the Coast Rangeland and western slope of the Cascades in Oregon and Washington. These conifer species listed can be planted any time after application. Other conifer species can be planted providing the user has prior experience indicating acceptable tolerance to soil residues of this product.

In the absence of prior experience, in order to avoid unacceptable injury, other species must be planted on a small scale to determine safety before large-scale plantings are made. Control Solutions, Inc. will not be responsible for injury to any conifers not listed on this label.

Tank Mix Combinations

For broader spectrum control the following products may be used in combination with MSM Turf Herbicide. 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.

MSM Turf Herbicide + Glyphosate

Tank mix 1 to 2 ounces of MSM Turf Herbicide with specified rate of glyphosate per acre. Refer to the product container for a list of species controlled. Follow use directions, precautions, and restrictions on the glyphosate label.

MSM Turf Herbicide + Imazapyr

Tank mix 1 to 2 ounces of MSM Turf Herbicide with specified rate of imazapyr per acre. Follow use directions, precautions, and restrictions on imazapyr label. Loblolly and slash pines may be transplanted the planting season following application. The combination controls ash, black gum, cherry, hawthorn, honeysuckle, hophorn beam, persimmon, oaks (red, white and water), sassafras, sweetgum, Vaccinium species, and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, and red maple.

MSM Turf Herbicide + Glyphosate + Imazapyr

Tank mix ½ to 1 ounce of MSM Turf Herbicide with specified rates of glyphosate and imazapyr per acre. Slash and loblolly pines may be transplanted the planting season following application. The combination controls cherry, dogwood, elms, oaks (red and water), persimmon, sassafras, sweetgum and suppresses hickory. Follow use directions, precautions, and restrictions on glyphosate and imazapyr labels.

MSM Turf Herbicide + Hexazinone

Tank mix 1 to 2 ounces of MSM Turf Herbicide per acre with hexazinone at the rates specified on the container for various soil textures. Loblolly and slash pines may be transplanted the planting season following application. Refer to the product container for a list of species controlled. Follow use directions, precautions, and restrictions on hexazinone label.

MSM Turf Herbicide + Sulfometuron Methyl

Tank mix ½ to 1 ½ ounces of MSM Turf Herbicide with specified rates of sulfometuron methyl per acre for herbaceous weed control. Refer to the product container and the “Weeds Controlled” section of this label for a listing of the weeds controlled. Loblolly and slash pines may be transplanted the planting season following application. Follow use directions, precautions, and restrictions on sulfometuron methyl label.

Tank mix 2 ounces of MSM Turf Herbicide with specified rates of sulfometuron methyl per acre for herbaceous weed control and early spring suppression of bull thistle and Canada thistle in the Coast Rangeland and western slope of the Cascade Mountains. Douglas fir may be transplanted at least 90 days following application. Follow use directions, precautions, and restrictions on sulfometuron methyl label.

Release

Hardwood Control and Suppression

MSM Turf Herbicide is used for application over the top of established slash and loblolly pine to control the species listed in “Weeds Controlled” and “Brush Species Controlled” section of this label. Apply 1 to 4 ounces per acre to control the species indicated, including kudzu.

Tank Mix Combinations

For broader spectrum control the following products may be used in combination with MSM Turf Herbicide.

MSM Turf Herbicide + Imazapyr A tank mix of 1 to 2 ounces of MSM Turf Herbicide with specified rate of imazapyr per acre may be applied to loblolly pine. Refer to the imazapyr label regarding the use of surfactants and the appropriate application timing with respect to the age and development stage of the pines. The combination controls ash, black gum, cherry, hawthorn, honeysuckle, hophornbeam, oaks (red, white and water), sassafras, sweetgum, Vaccinium species, and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, persimmon, and red maple. Follow use directions, precautions, and restrictions on imazapyr label.

MSM Turf Herbicide + Hexazinone Tank mix 1 to 2 ounces of MSM Turf Herbicide with hexazinone at the rates specified on the container for various soil textures. The combination may be applied to loblolly and slash pines. Follow use directions, precautions, and restrictions on hexazinone label.

Release

Herbaceous Weed Control

MSM Turf Herbicide may be applied to transplanted loblolly and slash pine for the control of herbaceous competition. Consult the “Weeds Controlled” section for a listing of the susceptible species and specified application rates. Best results are obtained when MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence.

Tank Mix Combinations

For broader spectrum control the following products may be used in combination with MSM Turf Herbicide:

MSM Turf Herbicide + Imazapyr Tank mix 1/2 to 1 ounce of MSM Turf Herbicide with specified rate of imazapyr per acre. The tank mix may be used on loblolly pine. Follow use directions, precautions, and restrictions on imazapyr label.

MSM Turf Herbicide + Sulfometuron Methyl Tank mix 1/2 to 1 ½ ounces of A MSM Turf Herbicide with specified rates of sulfometuron methyl per acre. Best results are obtained when MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence. The tank mix may be used on loblolly and slash pine. Follow use directions, precautions, and restrictions on sulfometuron methyl label.

MSM Turf Herbicide + Hexazinone Tank mix 1/2 to 1 ounce of MSM Turf Herbicide with hexazinone at the rates specified on the container for various soil textures. The combination may be applied to loblolly and slash pines. Follow use directions, precautions, and restrictions on hexazinone label.

IMPORTANT PRECATIONS--CONIFER PLANTATIONS ONLY

- Applications of MSM Turf Herbicide made to conifers that are suffering from loss of vigor caused by insects, diseases, drought, winter damage, animal damage, excessive soil moisture, planting shock, or other stresses may injure or kill the trees.
- Applications of MSM Turf Herbicide made for herbaceous release must only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.
- MSM Turf Herbicide applications may result in damage and mortality to other species of conifers when they are present on sites with those listed in the preceding section for conifer plantations.

RESTRICTIONS

- **DO NOT** apply MSM Turf Herbicide to conifers grown as ornamentals.

HARDWOOD PLANTATIONS

Application Information

MSM Turf Herbicide may be used to control many species of weeds on sites where yellow poplar is growing or is to be planted, and on sites where red alder is to be planted. Apply at up to 2 ounces per acre by ground equipment or by air (helicopter only). Refer to the "Weeds Controlled" sections of this label for a listing of susceptible species.

Application Timing

This product may be applied as a site preparation treatment prior to planting red alder or yellow poplar, and may also be applied as a pre-planting site preparation treatment for red alder in tank mixes with other herbicides labeled for this use.

MSM Turf Herbicide may also be applied over the top of planted yellow poplar seedlings after the soil has settled around the root systems but before the seedlings have broken dormancy (prior to bud break).

Release

Herbaceous Weed Control

MSM Turf Herbicide may be applied to yellow poplar for the control of herbaceous competition. Consult the "Weeds Controlled" for a listing of the susceptible species and specified application rates. Best results are obtained when MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence.

Tank Mix Combinations

Tank mix 1/2 ounce of MSM Turf Herbicide with hexazinone as directed on the package label for "RELEASE-HERBACEOUS WEED CONTROL" in pine plantations in the eastern U.S. Follow the hexazinone label instructions regarding altering the application rate by soil texture.

IMPORTANT PRECAUTIONS--HARDWOOD PLANTATIONS ONLY

- Application of hexazinone and MSM Turf Herbicide made to yellow poplar that are suffering from loss of vigor caused by insects, disease, drought, winter damage, animal damage, excessive soil moisture, planting shock or other stresses may injure or kill the seedlings.
- Applications of MSM Turf Herbicide made for release must only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.
- A surfactant may not be used for applications made over the tops of trees.
- Careful consideration must be given by an experienced and knowledgeable forester to match the requirements of yellow poplar to the conditions of the site. Treatment of yellow poplar planted on a site inadequate to meet its requirements may injure or kill the seedlings.

NON-AGRICULTURAL USES**WEEDS CONTROLLED****0.33 TO 0.5 OZ. PER ACRE (0.012 TO 0.0188 LBS. A.I. PER ACRE)**

Annual sowthistle	Goldenrod
Aster	Lambsquarters
Bahiagrass	Marestail/horseweed****
Beebalm	Maximillion sunflower
Bittercress	Miners lettuce
Bitter sneezeweed	Pennsylvania smartweed
Blackeyed-susan	Plains coreopsis
Blue mustard	Plantain
Bur buttercup	Redroot pigweed
Chicory	Redstem filaree
Clover	Rough fleabane
Cocklebur	Shepherd's purse
Common chickweed	Silky crazyweed (locoweed)
Common groundsel	Smallseed falseflax
Common purslane	Smooth pigweed
Common yarrow	Sweet clover
Conical catchfly	Tansymustard
Corn cockle	Treacle mustard
Cow cockle	Tumble mustard
Crown vetch	Wild carrot
Dandelion	Wild garlic
Dogfennel	Wild lettuce
False chamomile	Wild mustard
Fiddleneck tarweed	Wooly croton
Field pennycress	Wood sorrel
Flixweed	Yankeeweed

0.5 TO 1.0 OZ PER ACRE (0.0188 TO 0.0375 LBS. A.I. PER ACRE)

Blackberry	Honeysuckle
Black henbane	Multiflora rose and other
Broom snakeweed*	wild roses
Buckhorn plantain	Musk thistle***
Bull thistle	Oxeye daisy
Common crupina	Plumeless thistle
Common sunflower	Prostrate knotweed
Curly dock	Rosering gaillardia
Dewberry	Seaside arrowgrass
Dyer's woad	Sericea lespedeza
Gorse	Tansy ragwort
Halogeton	Teasel
Henbit	Wild caraway

1.0 TO 2.0 OZ. PER ACRE (0.0375 TO 0.075 LBS. A.I. PER ACRE)

Common mullein	Purple loosestrife
Common tansy	Purple scabious
Field bindweed**	Scotch thistle
Greasewood	Scouringrush
Gumweed	Salsify
Houndstongue	Snowberry
Lupine	St. Johnswort
Old world climbing fern (Logodium)	Sulfur cinquefoil
Perennial pepperweed	Western salsify
Poison hemlock	Whitetop (hoary cress)
	Wild Iris

1.5 TO 2.0 OZ PER ACRE (0.056 TO 0.075 LBS. A.I. PER ACRE)

Canada thistle**	Tall larkspur
Dalmation toadflax**	Wild parsnip
Duncecap larkspur	Yellow toadflax**
Russian knapweed**	

3.0 TO 4.0 OZ. PER ACRE (0.1125 TO 0.15 LBS. A.I. PER ACRE)

Kudzu

* Apply fall through spring

** Suppression, which is a visual reduction in weed competition (reduced population or vigor) as compared to untreated areas. Apply as a full coverage spray for best performance.

*** Certain biotypes of musk thistle are more sensitive to MSM Turf Herbicide and may be controlled with rates of 1/4 to 1/2 ounce per acre. Treatments of MSM Turf Herbicide may be applied from rosette through bloom stages of development.

**** Certain biotypes of mare's tail/horsetail are less susceptible to MSM Turf Herbicide and may be controlled by tank mixes with herbicides with a different mode of action.

Tank Mix Combinations for Problem Weed Control

For broader spectrum control and for use on certain biotypes of broadleaf weeds which may be tolerant to MSM Turf Herbicide and herbicides with the same mode of action, the following tank mixes may be used:

Dicamba + 2,4-D

Combine 1/2 ounce of MSM Turf Herbicide with 8 fluid ounces of dicamba and 16 fluid ounces of 2,4-D for the **control of kochia**.

Combine 1/2 ounce of MSM Turf Herbicide with 8 ounces of dicamba and 16 fluid ounces of 2,4-D for the **control of spotted knapweed**.

Combine 1 ounce of MSM Turf Herbicide with 8 fluid ounces of dicamba and 16 fluid ounces of 2,4-D for the **suppression of rush skeletonweed**.

NONCROP (INDUSTRIAL) SITES

Application Information

MSM Turf Herbicide may be used for general weed and brush control on non-crop and outdoor industrial sites including airports, military installations, fence rows, roadsides and associated rights-of-way, petroleum tank farms, pipeline and utility rights-of-way, pumping stations, railroads, storage areas, and plant sites. It may also be used for the control of certain noxious and troublesome weeds.

Consult the "Weeds Controlled" and "Brush Species Controlled" tables to determine the appropriate application rate.

MSM Turf Herbicide may be applied in tank mixture with other herbicides labeled for use on non-crop sites. Fully read the labels and follow all directions and restrictions on each label.

Application Timing

For best results, MSM Turf Herbicide must be applied postemergence to young, actively growing weeds. Application may be made at any time of the year, except when the ground is frozen.

GRASS REPLANT INTERVALS

Following an application of MSM Turf Herbicide to non-crop areas, the treated sites may be replanted with various species of grasses at the intervals specified below.

For soils with a pH of 7.5 or less observe the following replant intervals:

Species	MSM Turf Herbicide Rate oz/a	Replant Interval (months)
Brome, Meadow	1/2 – 1	2
	1 – 2	3
Brome, Smooth	1/2 – 1	2
	1 – 2	4
Fescue, Alta	1/2 – 1	2
	1 – 2	4
Fescue, Red	1/2 – 1	2
	1 – 2	4
Fescue, Sheep	1/2 – 1	1
	1 – 2	4
Foxtail, Meadow	1/2 – 1	2
	1 – 2	4
Green Needlegrass	1/2 – 2	1
	1/2 – 1	2
Orchardgrass	1 – 2	4
	1/2 – 1	1
Russian wildrye	1	2
	2	3
	1/2 – 1	1
Switchgrass	1/2 – 1	1
	1 – 2	3
Timothy	1/2 – 1	2
	1 – 2	4
Wheatgrass, Western	1/2 – 1	2
	1 – 2	3

For soils with a pH of 7.5 or greater observe the following replant intervals:

Species	MSM Turf Herbicide Rate oz/a	Replant Interval (months)
Alkali Sacaton	1/2 – 1	1
	1 – 2	3
Bluestem, Big	1/2 – 1	3
Brome, Mountain	1/2 – 1	1
	1 – 2	2
Gamma, Blue	1/2 – 2	1
Gamma, Sideoats	1/2	2
	>1/2	> 3
	1/2	2
Switchgrass	>1/2	> 3
	1/2 – 2	1
Wheatgrass, Thickspike	1/2 – 1	2
Wheatgrass, Western	1 – 2	3

The specified intervals are for applications made in the Spring to early Summer. Because MSM Turf Herbicide degradation is slowed by cold or frozen soils, applications made in the late Summer or Fall must consider the intervals as beginning in the Spring following treatment.

Testing has indicated that there is considerable variation in response among the species of grasses when seeded into areas treated with MSM Turf Herbicide. If species other than those listed above are to be planted into areas

treated with MSM Turf Herbicide a field bioassay must be performed, or previous experience may be used, to determine the feasibility of replanting treated sites.

TURF, INDUSTRIAL (UNIMPROVED ONLY)

Application Information

MSM Turf Herbicide may be used for selective weed control in unimproved industrial turf where certain grasses are well established and desired as ground cover. MSM Turf Herbicide may also be used for the control of certain noxious and troublesome weeds in turf.

In addition to conventional spray equipment, MSM Turf Herbicide may also be applied with invert emulsion equipment. When using an invert emulsion, mix the prescribed rate of MSM Turf Herbicide in the water phase.

Consult the "Weeds Controlled" table to determine which weeds will be controlled by the following specified rates.

Fescue and Bluegrass

Apply 1/4 to 1/2 ounce (0.0094 to 0.0188 lbs. a.i.) of MSM Turf Herbicide per acre.

Crested Wheatgrass and Smooth Brome

Apply 1/4 to 1 ounce (0.0094 to 0.0375 lbs. a.i.) of MSM Turf Herbicide per acre

Bermudagrass

Apply 1/4 to 2 (0.0094 to 0.075 lbs. a.i.) ounces of MSM Turf Herbicide per acre.

Application Timing

Applications may be made at any time of the year, except when the soil is frozen.

When a spring application is made on fescue or bluegrass, a second application may be made during the summer after full seedhead maturation.

Growth Suppression and Seedhead Inhibition (Chemical Mowing)

Application Information

MSM Turf Herbicide may be used for growth suppression and seedhead inhibition in well-established fescue and bluegrass turf at the use rate of 1/4 to 1/2 (0.0094 to 0.0188 lbs. a.i.) ounce per acre.

Application Timing

Application may be made after at least 2 to 3 inches of new growth has emerged until the appearance of the seed stalk.

Fescue Precautions:

This product may temporarily stunt tall fescue, cause it to turn yellow, or cause seedhead suppression. To minimize these symptoms, take the following precautions:

- Use a tank mix with 2,4-D
- Use the lowest specified rate for the target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make application later in the spring after the new growth is 5 to 6 inches tall, or in the fall

Yields from the first cutting may be reduced.

RESTRICTIONS

- **DO NOT** use more than 4/10 ounce (0.015 lbs. a.i.) of MSM Turf Herbicide per acre
- **DO NOT** use a surfactant if liquid nitrogen is used as a carrier
- **DO NOT** use a spray adjuvant unless it is a non-ionic surfactant

IMPORTANT PRECAUTIONS--INDUSTRIAL TURF ONLY

- An application of MSM Turf Herbicide may cause temporary discoloration (chlorosis) of the grasses. Use the lower specified rates for minimum discoloration.
- With fescue and bluegrass, sequential applications made during the same or consecutive growth periods (i.e. spring and fall) may result in excessive injury to turf.
- Excessive injury may result when MSM Turf Herbicide is applied to turf that is under stress from drought, insects, disease, cold temperatures (winter injury) or poor fertility.

- MSM Turf Herbicide is not for use on bahiagrass.

NATIVE GRASSES

MSM Turf Herbicide may be used for weed control and suppression in the establishment and maintenance of native grasses. It may be used where blue grama, bluestems (big, little, plains, sand, ww spar) bromegrasses (meadow), buffalograss, green sprangletop, Indiangrass, kleingrass, lovegrasses (atherstone, sand, weeping, wilman), orchardgrass, sideoats grama, switchgrass (Blackwell), wheatgrass (bluebunch, intermediate, pubescent siberian, slender, streamband, tall, thickspike, western), and Russian wildrye are established. It may also be applied over these species in the seedling stage, except for orchardgrass and Russian wildrye.

Application Information

Apply MSM Turf Herbicide at the rate of 1/10 (0.0038 lbs. a.i.) ounce per acre for the control and suppression* of bur buttercup (testiculate), common purslane, common sunflower*, cutleaf eveningprimrose*, flixweed*, lambsquarters* (common and slimleaf), marestail*, pigweed (redroot and tumble), snow speedwell, tansymustard* and tumble mustard (Jim Hill mustard).

*Suppression is a visual reduction in weed competition (reduced population or vigor) as compared to untreated areas. Degree of suppression will vary with the size of weed and environmental conditions following treatment.

Application Timing

For established grasses, apply when weeds are in the seedling stage.

For grasses in the seedling stage, apply preplant or preemergence where the soil (seed bed) has been cultivated.

IMPORTANT PRECAUTIONS – NATIVE GRASSES

Grass species or varieties may differ in their response to this herbicide. Consult with your state experiment station, university, or extension agent or other local experts as to sensitivity to this herbicide. If inadequate information is available, limit the initial use of this product to a small area. The types of grass in a grass seed mixture will vary in tolerance to this product, so the grasses in the final stand may not reflect the same ratio as in the seed mix.

DO NOT apply to grass that is stressed by severe weather conditions, drought, low fertility, water-saturated soils, disease or insect damage as grass injury may result. Severe winter stress, drought, disease or insect damage before or following application also may result in grass injury.

RANGELAND

This product can be used to control broadleaf weeds in forage grasses growing in rangeland. It may also be tank-mixed with other pesticides labeled for use on rangeland. Read and follow the labels on all products used in a tank mix, and observe the most restrictive precautions on each product's label.

This product may be applied to rangeland by air or ground. Use an adequate spray volume to obtain thorough coverage of the target weeds. In Idaho, Oregon, and Washington states, use at least 3 gallons of spray solution per acre.

WHEN ESTABLISHING GRASS IN RANGELAND

MSM Turf Herbicide can be used to control or suppress broadleaf weeds when establishing the following grasses planted in rangeland:

Blue Grama	Sideoats grama
Bluestems-	Switchgrass-
Big	Blackwell
Little	Wheatgrasses-
Plains	bluebunch
Sand	crested
WW spar	intermediate
Buffalograss	pubescent
Green sprangletop	Siberian
Kleingrass	slender
Lovegrasses-	steambank
Atherstone	tall
Sand	thickspike
Weeping	western
Wilman	Wildgrass-
Orchardgrass	Russian

If you need more information or advice, consult with the Natural Resource and Conservation Service, other government agencies or local experts.

Newly planted grasses often cannot compete effectively with weeds, and because of the severity of weed pressure in new grass stands, MSM Turf Herbicide alone may not provide satisfactory results. An additional herbicide application or mowing may be necessary.

Establishing Grass in Rangeland:

Prior to Planting (Pre-Plant) or After Planting but Prior to Grass Emergence (Pre-Emergence)

DO NOT use more than 1/10 ounce (0.0038 lbs. a.i.) MSM Turf Herbicide per acre when establishing grass in rangeland.

Use 1/10 ounce/acre (0.0038 lbs. a.i.) Pre-Plant on all labeled grasses except orchardgrass and Russian wildrye grass.

DO NOT apply Pre-Plant or Pre-Emergence to orchardgrass or Russian wildrye grass as severe crop injury may result.

Early Post-Emergence to New Plantings

Use 1/10 ounce/acre, (0.0038 lbs. a.i.) plus a non-ionic surfactant (at 2 to 4 pints/100 gallons of spray solution) on all labeled grasses any time after grass emergence.

DO NOT use a spray adjuvant other than non-ionic surfactant. Grass species will differ in time of emergence, so apply only after a majority of grasses are in the 3 to 4 leaf stage.

Postemergence to Stands With 1 to 5 Leaf Grasses Planted the Previous Season

Apply at 1/10 ounce per acre plus a non-ionic surfactant at the rate of 2 to 4 pints/100 gallons of spray solution on all labeled grasses when the majority of the grasses have one or more leaves. **DO NOT** use a spray adjuvant other than a non-ionic surfactant.

APPLICATION TO ESTABLISHED GRASSES IN RANGELAND

Rates

Use up to 1 ounce (0.0375 lbs. a.i.) MSM Turf Herbicide per acre as a broadcast spray when applying to established grasses in rangeland. **For Spot Applications**, use 1 ounce per 100 gallons of water. **DO NOT** apply more than 1 2/3 ounces (0.063 lbs. a.i.) per acre per year.

Refer to "Weeds Controlled" for a listing of weeds controlled and appropriate rates.

Timing

Apply to established native grasses including bluestems and grama, and on other established grasses including bermudagrass, bluegrass, bromegrass, fescue, orchardgrass and timothy that were planted during the previous growing season or earlier and are fully tillered, unless otherwise directed on this label. Timing information for application to several of these grass species are as follows:

Grass	Minimum Time From Grass Establishment to Application
Bermudagrass	2 months
Bluegrass, Bromegrass, Orchardgrass	6 months
Timothy	12 months
Fescue	24 months

Precautions:

Fescue:

Tall fescue that has been treated with this product may experience temporary stunting, yellowing, or seedhead suppression. To minimize these effects, observe the following:

- Use a tank mix with 2,4-D
- Use the lowest specified rate for the target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make application later in the spring after the new growth is 5 to 6 inches tall, or apply in the fall
-

Yields from the first cutting may be reduced.

RESTRICTIONS

- **DO NOT** use more than 4/10 ounce/acre (0.015 lbs. a.i.)
- **DO NOT** use a surfactant if liquid nitrogen is used as a carrier
- **DO NOT** use a spray adjuvant unless it is a non-ionic surfactant

Timothy:

Observe the following:

- Use a tank mix with 2,4-D
- Use the lowest specified rate for the target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make applications in the late summer or fall

RESTRICTIONS

- **DO NOT** apply unless timothy is at least 6 inches tall and actively growing, or crop yellowing and/or stunting may occur
- **DO NOT** use more than 4/10 ounce/acre (0.015 lbs. a.i.)
- **DO NOT** use a surfactant if liquid nitrogen is used as a carrier
- **DO NOT** use a spray adjuvant unless it is a non-ionic surfactant

Other Rangeland Grasses:

Application to Pensacola bahiagrass, ryegrass (Italian or perennial) and Garrison's creeping foxtail may cause severe injury to and/or loss of forage.

Forage grasses differ in their tolerance to this product. When treating a particular grass with MSM Turf Herbicide for the first time, use only on a small area. Larger areas may be treated the next season if no injury occurs.

Broadleaf forages including alfalfa and clover will be severely stunted or damaged by treatment with MSM Turf Herbicide.

CROP ROTATION CONSIDERATIONS

To maintain flexibility in crop rotation plans, **DO NOT** treat your entire pasture, rangeland or CRP acreage with this product at the same time.

Rotation Intervals

Minimum crop rotation intervals depend on breakdown rates of this product in the soil of treated areas. A number of conditions affect the breakdown rate, including soil moisture, soil temperature, soil pH, and soil microorganisms present. The rate of breakdown is faster in soils with low pH, high soil temperature and high soil moisture and is slower in soils with high pH, low soil temperature and low soil moisture. While soil pH remains relatively constant, soil temperature and soil moisture can vary from time to time and area to area, and these conditions must be monitored when making crop rotation decisions.

The minimum crop rotation interval from the last application of this product until the next planting date are shown below:

Minimum Rotation Intervals (Pasture, Rangeland, and CRP for Overseeding and Renovation)

Location	Crop/Grass	Maximum Rate Used (oz/ac)	Minimum Rotation Interval (months)
AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA, WV	Alfalfa, red clover, white clover, sweet clover, bermudagrass, bluegrass, ryegrass, tall fescue	1/10 to 3/10	4

All Other States	Wheat (except durum)	1/10 to 3/10	1
	Durum, barley, oats	1/10 to 3/10	10
	Red clover, white clover, sweet clover	1/10 to 2/10	12
	Bermudagrass, bluegrass, ryegrass	1/10 to 2/10	6
	Tall fescue	1/10 to 2/10	18
	Wheat (except durum)	1/10 to 2/10	1
All Areas With Soil pH of 7.5 Or Less	Durum, barley, oats	1/10 to 2/10	10
	Russian wildrye	1/10 to 1/2	1
	Green needlegrass, switchgrass, sheep fescue	1/10 to 1	1
All Areas With Soil pH of 7.9 Or Less	Meadow brome, smooth brome, alta fescue, red fescue, meadow foxtail, orchardgrass, Russian wildrye, timothy	1/10 to 1	2
	Alkali sacaton, mountain brome, blue grass, thickspike wheatgrass	1/10 to 1	1
	Sideoats grama, switchgrass	1/10 to 1/2	2
	Western wheatgrass	1/10 to 1	2
	Sideoats grama, Switchgrass, big bluestem	1/10 to 1	3

Important Soil pH Limitations

This product must not be used on soils with a pH above 7.9 because soil residues will not break down quickly and could remain in the soil for 34 months or more, injuring wheat, barley and other crops.

Before using, check soil pH by taking several soil samples at a depth of 0 to 4 inches from representative areas of the field. Analyze the samples separately for pH value. If needed, obtain additional information on soil sampling procedures from your local extension service or local experts.

BIOASSAY PROCEDURES

Conduct a field bioassay on treated soils before planting a rotated crop or grass species not listed in the Rotation Interval table above, or if the soil pH is above 7.9, or if use rates other than those listed in the Rotation Interval table above were used. Plant test strips of the crops or grasses that you plan to grow the following year in treated fields and observe crop response. **DO NOT** plant until the test strips demonstrate that the crop response is acceptable. Consult local experts for further information.

GRAZING AND HAYING RESTRICTIONS:

NONE. However, coveralls and shoes plus socks must be worn if cutting within 4 hours of treatment.

RANGELAND USE RESTRICTIONS:

- **DO NOT** apply more than 1 2/3 ounces (0.063 lbs. a.i.) per acre per year.
- **DO NOT** apply to grass that is stressed by severe weather conditions, drought, low fertility, disease, insect damage, or water saturated soils, as injury is likely. Stress by these factors following application may also cause injury.

- **DO NOT** apply this product in California or on the following counties in Colorado: Alamosa, Conejos, Costilla, Rio Grande, and Saguache.

RANGELAND PRECAUTIONS:

- Limit the initial use of this product to small areas unless local response to this herbicide by the grass species or variety is known.
- Grass seed mixtures will vary in tolerance to this product, so final stands may not reflect the same ratio as in the seed mix.
- This product may injure legumes that are undersown in rangeland or are found in seeding mixtures.
- When applying by ground to dry, dusty fields, control in the wheel-track areas may be reduced. Tank mixtures with 2,4-D or MCPA often improve weed control in such situations.

BRUSH CONTROL

Application Information

MSM Turf Herbicide may be used for the control of undesirable brush growing in non-crop areas. Applications may be made by air, high volume ground application, low volume ground application and ultra-low volume ground application. Except as noted for multiflora rose, MSM Turf Herbicide must be applied as a spray to the foliage. The application volume required will vary with the height and density of the brush and the application equipment used. Aerial application will require 15 to 25 gallons of water per acre; high volume ground application will require 100 to 400 gallons of water per acre; low volume ground application will require 20 to 50 gallons of water per acre; and ultra-low volume ground application will require 10 to 20 gallons of water per acre.

Regardless of the application volume and equipment used, thorough coverage of the foliage is necessary to optimize results.

BRUSH SPECIES CONTROLLED

Species	High Volume	Broadcast
	MSM Turf Herbicide Rate oz/100 gal	MSM Turf Herbicide Rate oz/a
Ash	1-2	1-3
Aspen	1-2	1-3
Black locust	1-2	1-3
Blackberry	1-2	1-3
Camelthorn	1-2	1-3
Cherry	1-2	1-3
Cottonwood	1-2	2-3
Eastern red cedar	1-2	2-3
Elder	1-2	2-3
Elm	1-2	1-3
Firs	3	1-2
Hawthorn	1-2	1-3
Honeysuckle	1-2	1/2-1
Mulberry	1-2	2-3
Multiflora rose	1-2	1-3
Muscadine (wild grape)	1-2	2-3
Oaks	1-2	1-3
Ocean spray (<i>Holodiscus</i>)	1-2	2-3
Osage orange	1-2	2-3
Red maple	1-2	2-3
Salmonberry	1/2-1	1-3
Snowberry	1/2-1	1-3
Spruce (black and white)	3	2-3
Thimbleberry	1/2-1	1-3
Tree of Heaven (<i>Ailanthus</i>)	1-2	1-2
Tulip tree	1/2-1	1-3
Wild roses	1/2-1	1-3
Willow	1/2-1	1-3

For low volume and ultra-low volume ground applications, mix 4 to 8 ounces of MSM Turf Herbicide per 100 gallons of spray solution.

Application Timing

Make a foliar application of the specified rate of MSM Turf Herbicide during the period from full leaf expansion in the spring until the development of full fall coloration on deciduous species to be controlled. Coniferous species may be treated at anytime during the growing season.

Tank Mix Combinations

MSM Turf Herbicide + Glyphosate

After consulting the “Brush Species Controlled” table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of glyphosate indicated for various application methods on the glyphosate label. Refer to glyphosate label for list of species controlled. Follow use directions, precautions, and restrictions on the glyphosate label.

MSM Turf Herbicide + Imazapyr

Combine 1 to 2 ounces (0.0375 to 0.075 lbs. a.i.) of MSM Turf Herbicide with the prescribed rate of imazapyr per acre and apply as a broadcast spray. Aerial application must use a minimum of 15 gallon per acre spray volume. In addition to species listed above controlled by MSM Turf Herbicide, this combination controls black gum, hophornbeam, sassafras, sweetgum, Vaccinium species, dogwood, myrtle dahoon, hickories, and persimmon. Follow use directions, precautions, and restrictions on the imazapyr label.

MSM Turf Herbicide + Triclopyr

After consulting the “Brush Species Controlled” table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of triclopyr indicated for the various application methods on its label. Refer to the triclopyr label for list of species controlled. Follow use directions, precautions, and restrictions on the triclopyr label.

MSM Turf Herbicide + Fosamine

After consulting the “Brush Species Controlled” table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of fosamine indicated for the various application methods on its label. Refer to the fosamine label for list of species controlled. Follow use directions, precautions, and restrictions on the fosamine label.

MSM Turf + Picloram

After consulting the “Brush Species Controlled” table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of picloram indicated for the various application methods on its label. Refer to the picloram label for list of species controlled. Follow use directions, precautions, and restrictions on the picloram label.

MSM Turf Herbicide + Picloram + Imazapyr

Combine 1 to 1 1/2 ounce (0.0375 to 0.056) of MSM Turf Herbicide with prescribed rates of picloram and imazapyr per 100 gallons of water. Apply as a high volume spray. The tank mix controls cherry, elms, box elder, maples, hackberry, redbud, ash, oaks (including shingle oak), black locust and sassafras.

Follow use directions, precautions, and restrictions on the imazapyr and picloram labels.

Spotgun Basal Soil Treatment

For control of muliflora rose, prepare a spray suspension of MSM Turf Herbicide by mixing 1 ounce per gallon of water. Mix vigorously until the MSM Turf Herbicide is dispersed and agitate periodically while applying the spray suspension. Apply the spray preparation with an exact delivery handgun applicator. Apply at the rate of 4 milliliters for each 2 feet of rose canopy diameter. Direct the treatment to the soil within 2 feet of the stem union. When treating large plants and more than one delivery is required, make applications on opposite sides of the plant. Applications must be made from early spring to summer.

IMPORTANT PRECAUTIONS--NON-CROP BRUSH ONLY

When using tank mixtures of MSM Turf Herbicide with companion herbicides, read and follow all use instructions, application rates, warnings and precautions appearing on the labels. Follow the most restrictive label instruction for each of the herbicides used.

SPRAY EQUIPMENT

Following a MSM Turf Herbicide application, **DO NOT** use the sprayer or mixing equipment for application to agricultural crops, except that it may be used to treat pasture, range and wheat. This is extremely important as low rates of MSM Turf Herbicide can kill or severely injure most agricultural crops. The selected sprayer must be equipped with an agitation system to keep MSM Turf Herbicide suspended in the spray tank. Use a sufficient volume of water to thoroughly cover the foliage of undesirable weeds, 10 to 40 gallons per acre. Select a spray volume and delivery system that will deliver a uniform spray pattern. Be sure the sprayer is calibrated before use. Avoid overlapping and shut off spray booms while starting, turning, slowing or stopping to avoid injury to desired plants.

Refer to the brush control section of this label for information unique to that particular use.

MIXING INSTRUCTIONS

1. Fill the tank 1/4 to 1/3 full of water.
2. While agitating, add the required amount of MSM Turf Herbicide.
3. Continue agitation until the MSM Turf Herbicide is fully dispersed, at least 5 minutes.
4. Once the MSM Turf Herbicide is fully dispersed, maintain agitation and continue filling tank with water. MSM Turf Herbicide must be thoroughly mixed with water before adding any other material.
5. As the tank is filling, add tank mix partners (if desired) then add the necessary volume of nonionic surfactant. Always add surfactant last.
6. If the mixture is not continuously agitated, settling will occur. If settling occurs, thoroughly re-agitate before using.
7. Metsulfuron Methyl spray preparations are stable if they are pH neutral or alkaline and stored at or below 100°F.
8. If MSM Turf Herbicide and a tank mix partner are to be applied in multiple loads, pre-slurry the MSM Turf Herbicide in clean water prior to adding to the tank. This will prevent the tank mix partner from interfering with the dissolution of the MSM Turf Herbicide.

SPRAYER CLEANUP

Spray equipment must be cleaned before MSM Turf Herbicide is sprayed. Follow the cleanup procedures specified on the labels of previously applied products. If no directions are provided, follow the six steps outlined below.

At the End of the Day

When multiple loads of MSM Turf Herbicide are applied, at the end of each day of spraying, the interior of the tank be rinsed with fresh water and then partially filled, and the boom and hoses flushed. This will prevent the buildup of dried pesticide deposits that can accumulate in the application equipment.

1. Drain tank; thoroughly rinse spray tanks, boom, and hoses with clean water. Loosen and physically remove any visible deposits.
2. Fill the tank with clean water and 1 gal of household ammonia* (contains 3% active) for every 100 gal of water. Flush the hoses, boom, and nozzles with the cleaning solution. Then add more water to completely fill the tank. Circulate the cleaning solution through the tank and hoses for at least 15 min. Flush the hoses, boom, and nozzles again with the cleaning solution, and then drain the tank.
3. Remove the nozzles and screens and clean separately in a bucket containing cleaning agent and water.
4. Repeat step 2.
5. Rinse the tank, boom, and hoses with clean water.
6. If only Ammonia is used as a cleaner, the rinsate solution may be applied back to the crop(s) specified on this label. **DO NOT** exceed the maximum labeled 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.

*Equivalent amounts of an alternate-strength ammonia solution or other specified cleaners can be used in the cleanout procedure. Carefully read and follow the individual cleaner instructions. Consult your agricultural dealer, applicator, or extension agent for a listing of approved cleaners.

Notes:

- **Attention: DO NOT** use chlorine bleach with ammonia, as dangerous gases will form. **DO NOT** clean equipment in an enclosed area.
- Steam-clean aerial spray tanks prior to performing the above cleanout procedure to facilitate the removal of any caked deposits.

- When MSM Turf Herbicide is tank mixed with other pesticides, all required cleanout procedures must be examined and the most rigorous procedure must be followed.
- In addition to this cleanout procedure, all pre-cleanout guidelines on subsequently applied products must be followed as per the individual labels.

STORAGE AND DISPOSAL

PESTICIDE STORAGE: Always use original container to store pesticides in a secured warehouse or storage building. **DO NOT** store near open containers of fertilizers, seeds, or other pesticides. **DO NOT** contaminate water, food or feed by storage or disposal.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER HANDLING:

Nonrefillable Container (flexible-bag-all weights): Nonrefillable container. **DO NOT** reuse or refill this container. Offer for recycling, if available or reconditioning; or puncture and dispose of in a sanitary landfill, by incineration, or by burning, if allowed by State and local authorities. If burned, stay out of smoke.

Nonrefillable Container (rigid-fifty lbs. or less): Nonrefillable container. **DO NOT** reuse or refill this container. Offer for recycling, if available. Clean container 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 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. Offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, by incineration, or by burning if allowed by State and local authorities. If burned, stay out of smoke.

Nonrefillable Container (rigid-greater than fifty lbs.): Nonrefillable container. **DO NOT** reuse or refill this container. Offer for recycling, if available. Clean container 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. Offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, by incineration, or by burning, if allowed by State and local authorities. If burned, stay out of smoke.

Refillable Container: Refillable container. Refill this container with metsulfuron-methyl only. **DO NOT** reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following **CONDITIONS, DISCLAIMER OF WARRANTIES and LIMITATIONS OF LIABILITY.**

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Control Solutions, Inc. All such risks shall be assumed by the user or buyer.

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