MINT - MEDIUM - GREATER THAN 3.0% ORGANIC MATTER

General Information

HERBICIDE RESISTANCE

Sulfin 4SC must be applied at the labeled rates and in accordance with label directions. Do not apply Sulfin 4SC at rates less than those listed in this label. Observe target areas prior to treatment and apply Sulfin 4SC when weeds are smaller.

If levels of control provided by applications of this product is reduced, and cannot be accounted for by factors such as misapplication, abnormal levels of target species or extremes of weather, it may be the case that target species have developed a strain resistant to applications of Sulfin 4SC. If resistance develops, Sulfin 4SC may not provide sufficient control of target species. Where you suspect target species are developing resistance, contact State/local agricultural advisors.

Certain species may develop resistance to this product/other herbicides where they are used repeatedly. Application of pesticide products therefore should be carried out in consultation with local/State agricultural advisors so that local resistance management strategies can be implemented. In order to limit the possibility of resistance developing, apply Sulfin 4SC in rotation with products that have a different mode of action and other classes of chemistry.

PRODUCT INFORMATION
Sulfin 4SC is a soil-applied selective herbicide. It will control listed grasses, sedges and broadleaf weeds. Sulfin 4SC is a flowable product that contains 4 pounds of active ingredient (sulfentrazone) per gallon.

The active ingredient sulfentrazone inhibits an enzyme required by plants in order to produce chlorophyll. Inhibiting this enzyme leads to the release of singlet oxygen (O) which then disrupts cellular membranes, resulting in cellular leakage and cellular death ultimately resulting in plant death.

Sulfin 4SC has a selective mode of action because sulfentrazone has a greater affinity for the PPO IX enzyme in listed weed species as opposed to listed crops.

Sulfin 4SC must be prepared and used in such a way so as to prevent the following:
- spills
- improper disposal of spray mixtures, rinsate or any excess pesticide
- back siphoning in wells

Setback
The following activities must not be carried out within 50 feet of any well (including drainage and abandoned wells) unless the activity is carried out on an impervious pad that has been built to withstand the heaviest possible weight that will be moved across the pad or placed upon it:
- Loading
- Mixing
- Washing/rinsing Sulfin 4SC from application equipment
The impervious pad must be made to contain any leaks or spills, as well as any rinsate/washwaters and rain that may fall upon it. An impervious pad that does not have a roof must have enough capacity to contain a minimum of 110% of the volume of the largest container that will be placed on the pad. Those pads that are covered by a roof must have enough capacity to contain a minimum of 100% of the volume of the largest container that will be placed on the pad. The roof must be big enough to completely exclude contact with the pad from rainfall.
The above containment volume minimum must be maintained. The minimum capacity volumes do not apply to the following:
- Vehicles delivering pesticide product to the load/mix area
Applicators must ensure that they are aware of any State requirements for containment and set back from wells.

The impervious pad must be self-contained so that surface water cannot flow over or from one pad. They must also be sloped to allow for material removal.
Do not load or mix Sulfin 4SC within 50 feet of any sinkholes, reservoirs, impounded or natural lakes, wells (including drainage and abandoned wells) or intermittent/perennial rivers and streams. This restriction does not apply where there are properly diked loading/mixing areas or impervious pads. The restriction also does not apply where abandoned wells are properly plugged or capped.

APPLICATION INSTRUCTIONS
Apply this product in one of the following ways:
- as a surface application, pre-emergence treatment (i.e. before crop and/or weed

emergence)
- as an incorporated treatment prior to planting
- Post-plant application
- Over-the-top
- Layby

For further detail, refer to the Crop Use Directions below.

Sulfin 4SC must be incorporated following a uniform surface application to a depth of 2 inches maximum. If it is incorporated to a greater depth, reduced control of target species may result. Applicators must ensure that there is no overlap between areas that have been treated with Sulfin 4SC due to soil movement. Such an overlap could cause an adverse crop response.

When Sulfin 4SC is soil applied or applied as a post-plant treatment, the herbicidal action of the product must be activated by moisture. The amount of moisture required depends upon a number of factors including:
- soil type
- organic matter content
- tilth
- existing soil moisture at the time of treatment

For an effective application of Sulfin 4SC, 0.5 to 1 inch of irrigation or rainfall is required within 7 to 10 days following treatment. If that level of moisture is not received, shallow incorporation must be undertaken in order to obtain sufficient control of target species. Activating moisture can be delayed for 10 – 14 days, and sometimes longer, depending on the factors listed above. If activating moisture is delayed, however, control of listed species may be reduced, due to the growth of weeds during the delay.

When Sulfin 4SC has been activated, it will provide control of listed weed species. The level of control will depend on the size and type of weed species when Sulfin 4SC is activated. The control of listed germinating weed species will be reduced when rain or irrigation follows a period of dry weather.

Apply Sulfin 4SC prior to the germination of crop seeds in order to avoid damage to emerging seedlings. Crop damage may occur where treatment is delayed if seeds are germinating, or are close to the soil surface.

If Sulfin 4SC is applied by surface application and activation has not been triggered by rainfall or irrigation (1⁄2” to 1” moisture) within 10 days of treatment, make a shallow incorporation (less than 2”) of the product so that germinating weed species can be controlled. Soil incorporation will also facilitate product activation with existing soil moisture.

Where there is prolonged periods when rainfall/irrigation is not available, alternative weed control methods should be considered.
Follow Crop Specific Use Directions exactly and with care, particularly for post plant treatments.
Lay-by/Over-the-top applications provide control of listed species through contact and residual control (depending on weed species).
Combining this product with a surfactant may improve control of listed species, but may also increase the risk of crop injury.
Applicators must be aware that certain crops will react differently to treatment with Sulfin 4SC according to the following factors:
- use rate
- specific crop species sensitivity
- soil composition

Once a treatment with Sulfin 4SC has been made, seedlings and germinating seeds absorb sulfentrazone from the soil solution. The amount of available active ingredient contained in the soil solution, is determined by the following factors:
- soil type
- soil pH
- soil organic matter content

Sulfentrazone is adsorbed by the organic matter and clay parts of soils. This absorption reduces the amount of active ingredient available for weed uptake. Clay content in soil tends to increase as the soil gets finer.

Crop Use Directions are indicated per soil types.

The organic matter in soil will vary widely within soil classifications. In order to assess organic matter soil content, a detailed analysis will be required.
The amount of sulfentrazone available for uptake by weed species will increase as the pH of the soil increases. The pH of the soil must be accurately assessed using representative soil samples. In addition, irrigation with water with a high pH (i.e. alkaline water) following treatment, will increase the amount of available sulfentrazone for uptake by target species. However, if irrigation water pH exceeds 7.5, crop damage may result. The likelihood of an adverse response by crops will decrease as the growth stage of crops advances.
The use rate of this product will be determined by the following factors:
- Timing of treatment

- The amount of activating moisture (rainfall/irrigation)
- Soil parameters
- Soil pH

The Crop Specific Use Directions (below) for each crop, are based on:

- soil type
- soil organic matter
- soil pH interactions

The performance of Sulfin 4SC and crop tolerance is based on strictly following the Crop Specific Use Directions.

Application by Air

- Apply Sulfin 4SC using appropriate nozzles that will allow for optimal coverage, will minimize drift and will keep fine spray droplets to a minimum.
- Apply Sulfin 4SC in an appropriate volume for sufficient coverage. Use minimum spray volume of 5 gallons per acre.
- Do not apply Sulfin 4SC when wind speed is likely to cause drift outside the target area.

Application by Ground

- Apply Sulfin 4SC using a boom and nozzle sprayer with the appropriate spray tips, screens and nozzles. Application equipment must be calibrated for optimal coverage and spray distribution at the appropriate pressure.
- Use spray nozzles that will minimize drift by keeping fine spray droplets to a minimum.
- Apply Sulfin 4SC in a minimum spray volume of 10 gallons per acre. Avoid overlapping applications which may result in excessive treatment and adverse crop response. When starting, turning or stopping, slower ground speed of application equipment may also lead to excessive treatment.
- Do not apply Sulfin 4SC when wind speed is likely to cause drift outside the target area.

Chemigation Application

Sulfin 4SC may be applied through sprinkler irrigation systems including center pivot, lateral move, end tow, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation system.

Do not connect any irrigation system (including greenhouse systems) used for pesticide application to a public water system. Crop injury, lack of effectiveness or

illegal residues on or in the crop can result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

The system must contain a functional check valve, vacuum relief valve, and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow. The pesticide injection pipeline must also contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. The pesticide injection pipeline must also contain a functional, normally closed, solenoid operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Sulfin 4SC should be metered into the irrigation system continuously for the duration of the water application. Sulfin 4SC should be diluted in sufficient volume to insure accurate application over the area to be treated.
Use the appropriate amount of water to carry the product to the soil surface. Continuous agitation is required to maintain product suspension in the solution tank. A jar test should be conducted to ensure that phase separation would not occur during dilution and application. Failure to achieve a uniform dilution throughout the time of application may result in undesirable residues or less than desirable weed control. Flush the lines at the completion of the application and then turn the water off promptly.

When using water from public water systems; DO NOT APPLY Sulfin 4SC THROUGH

ANY IRRIGATION SYSTEM PHYSICALLY CONNECTED TO A PUBLIC WATER SYSTEM. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days of the year. Sulfin 4SC may be applied through irrigation systems, which may be supplied by a public water system only if water from the water system is discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and to top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. Before beginning chemigation, always make sure that the air gap exists and that there is no blockage of the overflow of the reservoir tank.

Crop response to treatment with Sulfin 4SC will depend on the following factors:
- application rate and timing
- volume of water applied and pH
- sensitivity of crop type to treatment with Sulfin 4SC
- growth stage of the crop when irrigated

The amount of sulfentrazone available for uptake by weed species will increase as the pH of the soil increases. The pH of the soil must be accurately assessed using representative soil samples. In addition, irrigation with water with a high pH (i.e. alkaline water) following treatment, will increase the amount of available sulfentrazone for uptake by target species. However, if irrigation water pH exceeds 7.5, crop damage may result. The likelihood of an adverse response by crops will decrease as the growth stage of crops advances.

Application in Combination with Dry Fertilizers
- Sulfin 4SC may be impregnated on and applied in conjunction with a dry bulk fertilizer.
- Only apply combinations of this product and dry fertilizer with ground equipment.
- Do not apply via aerial application.
- Applicators using dry fertilizer must follow state regulations on the preparation of the Sulfin 4SC/fertilizer combination, including mixture preparation, storage, transportation, selling and treatment.

Directions for Dry Fertilizer Impregnation:
- Use the following method for impregnation:

1. Ensure that spray nozzles are calibrated and positioned for uniform Sulfin 4SC coverage of the dry fertilizer during the mixture process.

2. Make a slurry with Sulfin 4SC and water in a clean container.
3. Once made, add the Sulfin 4SC/water slurry to the impregnation spray tank.
4. Finish the solution by adding water as required.
- For impregnation and application of Sulfin 4SC and dry fertilizer, use a dry bulk fertilizer blender such as a closed rotary-drum mixer that is fitted with appropriate spray application equipment.
- See the CLEANING APPLICATION EQUIPMENT section (below) prior to cleaning equipment used for impregnation, transportation, loading and application of the Sulfin 4SC/dry fertilizer combination.
- DO NOT attempt to impregnate coated ammonium nitrate or limestone with Sulfin 4SC as neither can absorb the herbicide.
Application instructions for Sulfin 4SC impregnated dry fertilizers:
- Dry fertilizer impregnated with Sulfin 4SC must be applied using a dry fertilizer spreader. The application equipment must be correctly calibrated for sufficient and uniform coverage of the soil surface. If treatment is not
uniform, some areas may go untreated which may cause reduced control of target species.
- Avoid overlapping applications, which may cause labeled use rates to be exceeded, and may cause adverse crop response.
- Apply the dry fertilizer/ Sulfin 4SC combination at a rate of at least 200 pounds of impregnated dry bulk fertilizer per acre in order to provide sufficient soil coverage. See the appropriate crop specific section of this label for the use rate of Sulfin 4SC per acre
Next, use the following equation to calculate the amount of Sulfin 4SC that must be used to impregnate 2000 pounds (one ton) of dry bulk fertilizer:

Example 1: If use rate of Sulfin 4SC is 8 fl. oz. per acre, and 200 lbs fertilizer will be applied per acre:
(8) (2000 / 200) = 80 fl. oz Sulfin 4SC per ton of dry bulk fertilizer
Example 2: If use rate of Sulfin 4SC is 12 fl. oz. per acre and 400 lbs fertilizer will be applied per acre:
(12) (2000 / 400) = 60 fl. oz. Sulfin 4SC per ton of dry bulk fertilizer
Application in Combination with Liquid Fertilizers
- Sulfin 4SC, when applied in combination with a liquid fertilizer will provide control of listed weeds.
- Sufficient soil coverage is crucial for control of target species.
- Fertilizer solutions that may be used as a carrier for Sulfin 4SC may be concentrate

formulations as blended or diluted in water.

Directions for Liquid Fertilizer Combination:
- The selected spray system must have the spray capacity to allow uniform application of the treatment solution, and must be capable of maintaining agitation in the spray tank throughout the mixture and application procedures.
- Some spray application systems might need separate pumps to apply the solution and maintain agitation at the same time.
- Prior to combining the liquid fertilizer and Sulfin 4SC in the application tank, carry out a compatibility test to ensure that the mixture is stable, homogenous and compatible. [In a lidded glass jar (-1 quart size) all mix partners in their relative proportions. Invert, shake or mix the jar throughly. If mixture forms precipitates (flakes or sludge), gels, balls up or forms oily films or layers, this indicates incompatibility. Though signs of incompatibilty will typically be seen within 5 minutes of mixing, mixture should be observed for approximately 30 minutes.]
- Combine Sulfin 4SC and the carrier liquid fertilizer as follows:
1. Fill a clean spray tank ½ full of fertilizer solution.
2. Begin agitation of the fertilizer solution.
3. Use a clean container to create a slurry of Sulfin 4SC and water (equal parts of both)*.
4. Add the slurry slowly to the spray tank, continuing agitation throughout.
5. Rinse the slurry mix container and add rinsate solution to spray tank.
6. Finish filling spray tank to required level.
7. Maintain agitation throughout. The Sulfin 4SC/water slurry must be mixed thoroughly prior to application.
* For best mixing of the Sulfin 4SC/water slurry, add the slurry using induction systems on the sprayer fill plumbing system.
- Read and follow the label of each tank mix product used for precautionary statements, directions for use, rates and timings, and other restrictions.
Application instructions for Sulfin 4SC mixed with liquid fertilizers:
- The spray application solution must be applied immediately following preparation.
- Maintain agitation throughout mixture and application.
- Do not store spray solution in the spray tank for an extended period of time, or overnight.
- A combination of Sulfin 4SC and liquid fertilizer must not be premixed in nurse tanks.
- Applicators/sellers of liquid fertilizer must follow state regulations for liquid

fertilizers, including those regarding preparation, blending, registration, transportation, selling, treatment and storage.

Band Treatment Applications
Sulfin 4SC can be applied as a banded treatment application. When calculating rates for band treatment, apply the equivalent volume per acre rate for broadcast treatment by using the following equation

REPLANTING AND ROTATIONAL CROPS
- During replanting, keep soil tillage to a minimum so that the herbicide barrier is preserved, thereby maximizing weed control.
- In the event that the planting of crops listed in label directions does not produce a stand, only crops specified in this label or the tank mix partner may be planted. Where there is a tank mixture, the most restrictive label directions must be followed.
- The planted area must not be retreated with Sulfin 4SC or any other product containing sulfentrazone.
- Do not plant crops in previously treated areas unless in full compliance with the Rotational Restrictions (below)
Crop Rotation: Refer to the table below for the minimum interval from the time Sulfin 4SC was last applied until treated areas can be replanted with listed crops. Certain crops have a rotational interval of more than 12 months because of sensitivity and the risk of crop injury. Carry out a representative bioassay of the target area on the rotational crop in order to assess the crop’s sensitivity to applications of this product.
- For all crops not listed in the table above, there must be a minimum rotational interval of 12 months.
- When this product is tank mixed with another product(s), read and follow the directions of all tanks mix partners. The most restrictive directions must apply, including directions for re-cropping.

Limitations, Restrictions, and Exceptions

MINT

To control susceptible weeds, Sulfin 4SC can be applied to established stands of dormant mint or to newly planted mint, prior to emergence of new growth.

When applied as indicated on this label, the following weeds in mint will be controlled with Sulfin 4SC:

Amaranth, Powell Bedstraw, catchweed
Chamomile, mayweed Kochia (ALS and Triazine resistant)
Lambsquarters, common Morningglory, ivyleaf
Nightshade, Eastern black Nutsedge, yellow
Pigweed, redroot Shepherdspurse
Toadflax, yellow Thistle, Russian
Waterhemp (common, tall)

See Listed Weed Species section of this label for information on additional weeds.

Consult preceding information regarding Coarse, Medium or Fine soil categories. Use rate is inversely dependent on soil pH – use higher Sulfin 4SC rates with lower soil pH rates (7.0 and lower) and lower Sulfin 4SC rates with higher soil pH rates (greater than 7.0).

Application Instructions

Apply amount of Sulfin 4SC indicated above can be applied to dormant mint in the fall or spring, or preemergence to new mint plantings.
Dormant Applications: Application can be made to established stands of mint in the spring (after spring cultivation has been completed) or in the fall (after post-harvest cultivation has been completed), prior to emergence of new growth. Split applications of Sulfin 4SC can be used for preemergence control of winter and spring annual weeds.

New Planting Applications: When applying to new mint plantings, reduce rate of application by 25% of the rate listed for established plantings. Apply product preemergence to both weeds and mint.

Important
- Read and follow all precautions, instructions, rotational crop guidelines, replanting instructions, and any other information on this label prior to use.
- Consult with university or extension weed management specialists for information on using Sulfin 4SC with specific local varieties or cultivars of mint.
- Do not apply more than 0.375 lbs sulfentrazone (12.0 fl. oz. product) per acre per 12 month period. The 12 month period starts at the point of first application.
- Do not use on soils that contain less than 1% organic matter (soils classified as ‘sand’).
- Do not apply Sulfin 4SC to mint plantings once new growth has emerged, to avoid

severe injury to plant tissue.
- Application to mint fields under stress (environmental, cultural, pests, disease) may result in crop injury. Apply to healthy mint fields only.
- To activate herbicide and move product into the soil, moisture (in the form of rain or overhead irritation) is required after application.

Method
Broadcast/Foliar Air
Broadcast/Foliar Ground
Rates
field_rates 0

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Restricted Entry Interval

12 hours

Soils
Medium
Loam
Silt Loam
Silt
Sandy Clay Loam
Sandy Clay
Timings
Preemergence (Crop)