



# WILLOWOOD ETHOFUMESATE 4SC

## Suspension Concentrate

**BROAD SPECTRUM HERBICIDE** for selective control of weeds in sugar beets, garden beets, onions, garlic, shallots (in all states) and carrots in Washington and Oregon only.

**GRASS SEED HERBICIDE** for selective control of weeds in certain grass seed crops and commercial sod production in California, Idaho, Nevada, Oregon and Washington.

**TURF HERBICIDE** for selective control of weeds, on Ornamental Turf

<b>ETHOFUMESATE</b>	<b>GROUP</b>	<b>8</b>	<b>HERBICIDE</b>
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<b>ACTIVE INGREDIENT:</b>	<b>% by Weight</b>
Ethofumesate (2-ethoxy-2, 3-dihydro-3, 3-dimethyl-5-benzofuranyl methanesulfonate).....	42.0%
<b>OTHER INGREDIENTS:</b> .....	58.0%
<b>TOTAL:</b> .....	100.0%

This product contains 4.0 lbs. active ingredient per gallon.

EPA Reg. No. 87290-1

<p><b>KEEP OUT OF REACH OF CHILDREN</b></p> <p><b>CAUTION</b></p>
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### FIRST AID

<b>If swallowed:</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>If inhaled:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>If in eyes:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If on skin or clothing:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>

### HOT LINE NUMBER

<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For emergency information concerning this product, call the National Pesticides Information Center (NPIC) at 1-800-858-7378 seven days a week, 6:30 am to 4:30 pm Pacific Time or your poison control center at 1-800-222-1222.</p>
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**Manufactured For:**  
 Willowood, LLC  
 385 Interlocken Crescent, Suite #240  
 Broomfield, CO 80021

**Net Contents:**  
**2.5 Gallons**

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION**

Harmful if swallowed or inhaled. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**All mixers, loaders, applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves (except flaggers, or applicator in cockpits, and enclosed cabs)
- Shoes plus socks

See Engineering Controls for additional requirements.

**On-Site Closed Mixing and Loading System Engineering Controls for Liquid Formulations for Commercial Dry Bulk Fertilizer Impregnation**

Mixers and loaders must use a closed system designed by the manufacturer to provide dermal and inhalation protection to enclose the pesticide to prevent it from contacting handlers or other people AND the system is functioning properly and is used and maintained in accordance with the manufacturer's written operating instructions. The handlers:

- Must wear PPE listed on this label
- Must wear protective eyewear if the system operates under pressure
- Must have immediately available for use in an emergency, such as a spill, or equipment breakdown, chemical resistant footwear and chemical resistant apron

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

**ENGINEERING CONTROLS STATEMENT**

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. Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

**USER SAFETY REQUIREMENTS**

**Users should:**

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- 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**

This pesticide is toxic to fish. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate.

**USE RESTRICTIONS**

**DO NOT OVERTREAT.** Willowood Ethofumesate 4SC or tank mixes must be used for label listed purposes and at label specified rates only.

Do not graze livestock on treated crops. Do not feed treated grass clippings to livestock.

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

If crop is lost due to climatic or soil conditions following application of Willowood Ethofumesate 4SC or tank mixes, do not plant crops other than sugar beets or ryegrass in treated land during the same season. Do not retreat field with Willowood Ethofumesate 4SC. If fields are replanted to sugar beets, reseed into treated band.

Do not rotate with any crops other than sugar beets or ryegrass for:

- 12 months following preplant incorporated, preemergence, conventional postemergence applications, or split (low rate) applications totaling more than 12 fl. oz. (0.375 lb. ai/acre);
- 6 months following split (low rate) postemergence applications totaling 12 fl. oz. (0.375 lb. ai/acre) or less.

Thorough tillage, including moldboard plowing, should precede the planting of crops other than sugar beets or ryegrass. Do not use Willowood Ethofumesate 4SC on muck or peat soils.

Do not allow spray mixture to stand in tank overnight. Flush and drain spray equipment after each day's use.

Store unused spray mixture in tightly-sealed containers and protect from frost.

This label must be in the possession of the user at the time of pesticide application.

## **DIRECTIONS FOR USE**

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

Read entire Directions for Use and Condition of Sale and Limitation of Warranty and Liability before using this product.

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.

### **SHAKE CONTAINER WELL BEFORE USING.**

#### **AGRICULTURAL USE REQUIREMENTS**

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours for all crops, except turf grown for sod. The REI for turf is 9 days. The REI for each crop is listed in the directions for use associated with each crop.

Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

#### **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 or allow others to enter until sprays have dried.

Professional pesticide applicators applying to residential turf, including home lawns, parks, and recreation areas must inform their customers that all persons and pets must be kept off the treated turf until sprays have dried.

#### **RESISTANCE-MANAGEMENT**

For resistance management, Willowood Ethofumesate 4SC is a Group 8 herbicide based on the mode of action classification system of the Weed Science Society of America. Any weed population may contain or develop plants naturally resistant to Willowood Ethofumesate 4SC and other Group 8 herbicides. Weeds resistant to Group 8 herbicides may be effectively managed utilizing another herbicide alone or in mixtures from a different Group and/or by using cultural or mechanical practices. However, a herbicide mode of action classification by itself may not adequately address specific weeds that are resistant to specific herbicides. Consult your local company representative, state cooperative extension service, professional consultants or other qualified authorities to determine appropriate actions for treating specific resistant weeds.

To delay herbicide resistance, take one or more of the following steps:

- Rotate the use of Willowood Ethofumesate 4SC or other Group 8 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 use 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 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.
- For further information or to report suspected resistance, contact a Willowood, LLC representative.

### **Weed Management Practices**

To minimize the occurrence of ethofumesate-resistant biotypes, observe the following weed management practices:

- Scout your fields before and after herbicide application.
- Start with a clean field, using either a burndown herbicide application or tillage.
- Control weeds early when they are relatively small (less than 4 inches).
- Incorporate other herbicides (e.g., a selective and/or a residual herbicide) and cultural practices (e.g., tillage or crop rotation) as part of your weed control system, where appropriate.
- Use the full specified herbicide rate and proper application timing for the hardest to control weed species present in the field. Avoid tank mixtures with other herbicides that reduce the efficacy of this product (through antagonism), or with ones that encourage application rates of this product below those specified on this label.
- Control weed escapes before they reproduce by seed or proliferate vegetatively.
- Clean equipment before moving from field to field to minimize the spread of weed seed or plant parts.
- Use new commercial seed that is as free of weed seed as possible.
- Use good agronomic principles that enhance crop development and crop competitiveness.
- Report any incidence of repeated non-performance of this product on a particular weed to your Willowood, LLC representative, local retailer, or county extension agent.

### **Management of Ethofumesate-Resistant Biotypes**

Appropriate testing is critical in order to determine if a weed is resistant to ethofumesate. Contact your Willowood, LLC representative to determine if resistance in any particular weed biotype has been confirmed in your area, or visit on the Internet [www.weedscience.org](http://www.weedscience.org).

The following good agronomic practices can reduce the spread of confirmed ethofumesate-resistant biotypes:

- If a naturally occurring resistant biotype is present in your field, this product may be tank-mixed or applied sequentially with an appropriately labeled herbicide with a different mode of action to achieve control.
- Cultural and mechanical control practices (e.g., crop rotation or tillage) can also be used as appropriate.
- Scout treated fields after herbicide application and control weed escapes, including resistant biotypes, before they set seed.
- Thoroughly clean equipment before leaving fields known to contain resistant biotypes.

### **SPRAY DRIFT MANAGEMENT**

This chemical can contaminate surface water through spray drift. A variety of factors including weather conditions (e.g. wind direction, wind speed, temperature, relative humidity) and method of application (e.g. ground, aerial) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Damage to sensitive crops can occur as a result of spray drift. Spray drift can be managed by several application factors and by spraying under the appropriate climatic conditions. Consequently, avoidance of spray drift is the responsibility of the applicator and grower.

#### **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 all applications, applicators are required to use a Medium or larger 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 Applications

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy.
- For all applications, applicators are required to use a Medium or larger 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.

## Spray Drift Advisories

- THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.
- BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.
- 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 aurally to crops, do not release spray at a height greater than 10 ft 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.

## SUGAR BEETS

### PRODUCT INFORMATION

Willowood Ethofumesate 4SC is a selective herbicide for use in sugar beets for the control of the weed species listed below. It provides effective control of these weeds for up to 10 weeks following application.

Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

### RESTRICTIONS

The combined pre- and postemergence use rates cannot exceed more than 4.0 lbs. a.i. (8.0 pints of product) per acre per year for sugar beets.

For preemergent and preplant application, do not apply more than 3.75 lb a.i. (7.5 pints of product) per acre. Do not apply more than 2 applications per year.

For postemergent applications, do not apply more than 2 applications at 2 lb a.i./A per application at 10-day retreatment intervals.

Willowood Ethofumesate 4SC may be applied up to 45 days before harvest.

**Aerial Application Rate Restriction:** Do not apply more than 1.5 lbs. a.i. per application (3 pints of product) per acre per application with aircraft.

### PRECAUTIONS

See Use Precautions for additional information on proper use.

### TANK-MIXING INSTRUCTIONS

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.

### WEED SPECIES CONTROLLED

Annual Broadleaf Weeds		Annual Grass Weeds	
Black nightshade	<i>Solanum nigrum</i>	Annual bluegrass	<i>Poa annua</i>
Common chickweed	<i>Stellaria media</i>	Barnyardgrass*	<i>Echinochloa crus-galli</i>
Common lambsquarters	<i>Chenopodium album</i>	Canarygrass	<i>Phalaris canariensis</i>
Common purslane	<i>Portulaca oleracea</i>	Green foxtail	<i>Setaria viridis</i>
Kochia	<i>Kochia scoparia</i>	Large crabgrass	<i>Digitaria sanguinalis</i>
Ladysthumb	<i>Polygonum persicaria</i>	Volunteer barley	<i>Hordeum sp.</i>
Pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>	Volunteer wheat	<i>Triticum sp.</i>
Powell amaranth	<i>Amaranthus powellii</i>		
Redroot pigweed	<i>Amaranthus retroflexus</i>	Wild oats**	<i>Avena fatua</i>
Russian thistle	<i>Salsola kali var. tenuifolia</i>	Yellow foxtail	<i>Setaria glauca</i>
Wild buckwheat	<i>Polygonum convolvulus</i>		
Waterhemp	<i>Amaranthus rudis/tuberculatus</i>		

\* Control of barnyardgrass may be reduced with the Willowood Ethofumesate 4SC + chloridazon tank mix because of the lower rate of Willowood Ethofumesate 4SC.

\*\* Control of wild oats has been inconsistent in Minnesota and North Dakota.

<b>Willowood Ethofumesate 4SC alone will also reduce competition from these HARD-TO-CONTROL weeds:</b>	
Annual Sowthistle	<i>Sonchus oleraceus</i>
Puncturevine	<i>Tribulus terrestris</i>
Shepherdspurse	<i>Capsella bursa-pastoris</i>
Purple nutsedge	<i>Cyperus rotundus</i>
Yellow nutsedge	<i>Cyperus esculentus</i>
Roundup Ready Canola (suppression)	<i>Brassica rapa</i>

Apply tank mixes only in specific regions or States and in accordance with directions on label.

## PREPLANT INCORPORATED AND PREEMERGENCE APPLICATIONS

**SOIL PREPARATION:** The soil should be prepared according to good agricultural practices. Large clods can reduce the effectiveness of Willowood Ethofumesate 4SC and tank mixes. All existing vegetative growth should be thoroughly worked into the soil before treatment.

**SPRAY EQUIPMENT:** Apply Willowood Ethofumesate 4SC alone or in tank mixes to the soil using standard low pressure (20 to 50 psi) spray equipment. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Do not use smaller than 50-mesh strainer. Uniformly apply the label-listed rates of Willowood Ethofumesate 4SC or tank mixes in 10 to 60 gallons of water per acre on a broadcast basis. Avoid overlaps since crop injury may result. When applying Willowood Ethofumesate 4SC or tank mixes in a band; check to make certain that the band width is accurate for the dosage rate being applied.

The spray tank and lines should be thoroughly cleaned and rinsed prior to using Willowood Ethofumesate 4SC.

**INCORPORATION EQUIPMENT:** Where soil incorporation is advised, use a hooded power- or ground-driven rotary tiller, rolling cultivator, or similar equipment properly adjusted to uniformly incorporate Willowood Ethofumesate 4SC or tank mixes to a depth of 1 to 2 inches. Deeper incorporation may reduce effectiveness. Do not apply Willowood Ethofumesate 4SC or tank mixes through soil injector shanks. Incorporation should be accomplished prior to planting. If done after planting, proper precautions should be taken to avoid damaging or moving the crop seed. See below for Layering Application.

**LAYERING APPLICATION: Spring:** Form beds with appropriate bedding equipment. Pre-irrigate field if necessary. Remove bed top with suitable de-ridging machinery to provide a minimum width of 10" across the top of the bed. Apply Willowood Ethofumesate 4SC in a band at the specified rate indicated in the appropriate regional dosage table and cover the treated band with 1 inch of soil using ditchers or discs equipment. Shape the bed with roller shaper and irrigate until the tops of the beds are thoroughly wetted. Irrigate from furrows on both sides of the row.

**Fall:** This method of application can be used when spring moisture is marginal or where irrigation water is not available at planting time. Fall bedding utilizes the winter-accumulated moisture to enhance activation of the herbicide and to aid in germination of the sugar beet crop.

Prepare the field (as for planting; plow; pack, and float, etc.), in the fall, usually late September or October. Apply Willowood Ethofumesate 4SC in a band to the soil surface at the specified rate indicated in the appropriate regional dosage table. Be sure that the soil surface to be treated is free of trash and vegetation.

Cover the treated bands with soil and form beds or ridges using ditchers or discs. In the spring when the soil is sufficiently dry to be worked, de-ridge the beds down to within 1/2" to 1" of the treated layer using suitable equipment such as the Kirchner bedder or Oregon Northslope harrow. When de-ridging, maintain the original bedding guidance system by using a bull tongue chisel, slide guides or similar equipment. This will ensure that the planter will follow in the treated band. Plant sugar beets in the de-ridged area when the soil conditions allow.

### APPLICATION INSTRUCTIONS

**Sugar beets grown under rainfall:** Apply Willowood Ethofumesate 4SC alone or in a tank mix preemergence at time of planting or shortly after, but prior to weed germination. Willowood Ethofumesate 4SC or tank mix does not require mechanical soil incorporation provided that sufficient rainfall occurs shortly following application to activate the chemical. One-half inch of rainfall is usually adequate for activation. In areas where rainfall can be marginal for activation, such as the Red River Valley (Minnesota and North Dakota), it is advised that Willowood Ethofumesate 4SC or the tank mix be applied before or at the time of planting and incorporated into the soil.

**Sugar beets grown under furrow irrigation:** Apply Willowood Ethofumesate 4SC alone or in a tank mix to the soil surface preplant or at time of planting, but prior to weed germination, and incorporate into the soil. Where sugar beets are grown in beds, apply Willowood Ethofumesate 4SC or tank mix after bedding and incorporate. Since Willowood Ethofumesate 4SC or tank mix must have moisture to control weeds effectively, irrigate until tops of beds are thoroughly wetted.

**Sugar beets grown under sprinkler irrigation:** Apply Willowood Ethofumesate 4SC alone or in a tank mix preemergence at time of planting or shortly after, and irrigate prior to crop and weed germination. Repeat irrigation as necessary to maintain good moisture in upper soil layer. Apply at least one-half inch of water during first irrigation. Do not mechanically incorporate Willowood Ethofumesate 4SC or tank mix into the soil under sprinkler irrigation.

**Cultural Practices Following Application:** When properly applied, Willowood Ethofumesate 4SC alone or in a tank mix will provide up to ten weeks control of susceptible weed species. When cultivating fields in which Willowood Ethofumesate 4SC or tank mixes have been banded, care should be exercised to minimize the movement of untreated soil into the treated band. Where a broadcast application has been made, do not cultivate deeper than two inches, as this reduces the effectiveness of Willowood Ethofumesate 4SC or tank mixes.

## WILLOWOOD ETHOFUMESATE 4SC ALONE

### DOSAGE TABLE

(All Regions Except North Dakota and Minnesota):

Soil Texture	Rate of Willowood Ethofumesate 4SC per Acre <sup>1</sup>			
	Broadcast	7-inch Band Width <sup>2</sup>		
		22" Row	28" Row	30" Row
<b>Coarse Textured Soils:</b> Sands, loamy sands and sandy loams	2 1/4 to 3 3/4 Pints	3/4 to 1 1/4 Pints	2/3 to 1 Pint	1/2 to 1 Pint
<b>Medium Textured Soils:</b> Silt loams, clay loams which contain less than 3% organic matter	3 3/4 to 6 Pints	1 1/4 to 2 Pints	1 to 1 1/2 Pints	1 to 1 3/4 Pints
<b>Fine Textured Soils:</b> Silt loams, clay loams, clays which contain more than 3% organic matter	6 to 7 1/2 Pints	2 to 2 1/2 Pints	1 1/2 to 2 Pints	1 1/2 to 1 3/4 Pints

<sup>1</sup> Use the higher rate within each soil texture category on the finer texture soils and/or where Kochia, barnyardgrass or black nightshade are expected to be a problem.

<sup>2</sup> For other band or row widths, adjust the rate in proportion to the area actually treated.

### DOSAGE TABLE

(North Dakota and Minnesota only):

Soil Texture	Willowood Ethofumesate 4SC per Acre	
	Broadcast	7-inch Band Width <sup>1</sup> 22" Row
<b>Coarse Textured Soils:</b> Sandy loams only	6 Pints	2 Pints
<b>Medium Textured Soils:</b> Silt loams and clay loams	6 Pints	2 Pints
<b>Fine Textured Soils:</b> Heavy clays	7 1/2 Pints	2 1/2 Pints

<sup>1</sup> For other band or row widths, adjust the rate in proportion to the area actually treated.

#### Preplant and Preemergence Use Restrictions

Willowood Ethofumesate 4SC applied alone or in tank mixes according to label directions and under normal growing conditions may cause temporary leaf fusion, distortion and stunting. Crop injury may occur during early growth when crop is stressed due to herbicide residue carryover, highly saline or alkaline soils, unusually cold and wet weather or improperly placed fertilizers or soil insecticides.

Unusually dry, windy weather, which dries the upper soil layer, following application of Willowood Ethofumesate 4SC, may reduce effectiveness.

DO NOT OVERTREAT.

**Crop Planting Restrictions:** If crop is lost due to unfavorable growth conditions following treatment, do not replant with crops other than sugar beets or ryegrass in treated land during the same season. If fields are replanted to sugar beets, reseed into treated band. Do not retreat field with conventional rates of Willowood Ethofumesate 4SC in the same season.

### POSTEMERGENCE APPLICATION

#### Product Information

Willowood Ethofumesate 4SC alone is not advised for postemergent use.

#### WILLOWOOD ETHOFUMESATE 4SC + GLYPHOSATE (TANK MIX)

Postemergence application of Willowood Ethofumesate 4SC plus glyphosate can improve control of weeds on this label including glyphosate-resistant biotypes.

#### POSTEMERGENCE APPLICATIONS

Apply Willowood Ethofumesate 4SC + glyphosate to Roundup Ready sugarbeets only.

Apply Willowood Ethofumesate 4SC + glyphosate to sugar beets having greater than 2 true leaves.

Apply Willowood Ethofumesate 4SC + glyphosate to small weeds.

Apply Willowood Ethofumesate 4SC+ glyphosate in a single or multiple application(s) using ground or air application.

The greater the number of Willowood Ethofumesate 4SC + glyphosate applications, the greater the weed control.



Include the following spray adjuvants to tank mixes of Willowood Ethofumesate 4SC + glyphosate: ammonium sulfate plus methylated seed oil (MSO) at 1.25 to 2 pints/A or high surfactant methylated seed oil (HSMOC) at 1.0 to 2 pints/A or nonionic surfactant (NIS) at 0.25% v/v. Do not include a crop oil concentrate adjuvant with this mixture.

#### DOSAGE TABLE

##### WILLOWOOD ETHOFUMESATE 4SC + GLYPHOSATE DOSAGE FOR POSTEMERGENCE APPLICATIONS

Sugar Beet Stage	WILLOWOOD ETHOFUMESATE 4SC PINTS/ACRE BROADCAST
> 2 true leaves to 45-days prior to harvest	1/2 - 8

#### Willowood Ethofumesate 4SC + Glyphosate Postemergence Use

##### Precautions

Ethofumesate 4SC + glyphosate applied at greater than 5 pints/A to fields having coarse-textured low organic matter soils will likely cause crop response.

Sugar beet injury is possible when applying Willowood Ethofumesate 4SC + glyphosate at greater than 5 pints/A to small sugar beets.

Removing MSO, HSMOC, and NIS from tank mixes with metolachlor, dimethenamid, acetochlor, triflurosulfuron-methyl and clopyralid should decrease crop response, but weed control may be reduced.

Tank mixes of metolachlor, dimethenamid, acetochlor, triflurosulfuron-methyl and/or clopyralid plus adjuvants with Willowood Ethofumesate 4SC + glyphosate will cause crop response and likely yield loss, especially with increasing rates of Willowood Ethofumesate 4SC.

Sugar beet injury can occur when Willowood Ethofumesate 4SC is applied preemergence and metolachlor, dimethenamid or acetochlor are mixed with Willowood Ethofumesate 4SC + glyphosate postemergence.

Sugar beet injury will be enhanced if Willowood Ethofumesate 4SC + glyphosate is applied following a preplant application of eptam.

Sugar beet injury can be enhanced if the crop is under stress.

##### Restrictions

Do not apply greater than a total of 8 pints/A (4 lb a.i./A) of Willowood Ethofumesate 4SC in a single or multiple postemergence application(s) per year. Do not apply greater than 8 pints/A (4 lb a.i./A) for the entire year for all applications. Do not apply more than 2 postemergent applications at a rate of 2 lb a.i./A.

**Aerial Application Rate Restriction:** Do not apply more than 1.5 lbs. a.i. (3 pints of product) per acre per application with aircraft.

Allow at least 10 days between postemergence applications.

Willowood Ethofumesate 4SC may be applied up to 45 days before harvest. For all products mixed with Willowood Ethofumesate 4SC, follow the most restrictive pre-harvest interval listed on the product label.

#### DOSAGE TABLE

##### WILLOWOOD ETHOFUMESATE 4SC + GLYPHOSATE - MAXIMUM DOSAGE AND NUMBER OF GROUND APPLICATIONS FOR POSTEMERGENCE APPLICATIONS

	Annual Rate			Annual Application Rate
Max. Single Rate of Ethofumesate, lb. AI/A	Max. # Applications of Willowood Ethofumesate 4SC per Year	Max. Ethofumesate Rate, lb. AI/A	Max. No. crop cycles per year	Max. Rate, Ethofumesate lb. AI/A/year)
4.0	4	4.0	1	4.0

#### WILLOWOOD ETHOFUMESATE 4SC MIXTURES WITH FERTILIZERS

##### WILLOWOOD ETHOFUMESATE 4SC Impregnation on Dry Bulk Fertilizers

Willowood Ethofumesate 4SC may be impregnated on many dry bulk fertilizers (See "1" below) and applied and incorporated into the soil before planting for the control of labeled grasses and broadleaf weeds in sugar beets. See instructions for impregnation on dry bulk fertilizers at end of label.

##### WILLOWOOD ETHOFUMESATE 4SC with Liquid Fertilizer

Directions for mixing Willowood Ethofumesate 4SC with liquid fertilizers for spray tank applications, and testing physical compatibility of liquid fertilizer – Willowood Ethofumesate 4SC mixture can be found at the end of the label.

## BEETS, TABLE (GARDEN)

### PRODUCT INFORMATION

Willowood Ethofumesate 4SC is a selective herbicide for use in table beets for the control of the weed species listed below. Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

### WEED SPECIES CONTROLLED

<b>Annual Broadleaf Weeds</b>	
Black nightshade	<i>Solanum nigrum</i>
Common chickweed	<i>Stellaria media</i>
Common lambsquarters	<i>Chenopodium album</i>
Common purslane	<i>Portulaca oleracea</i>
Eastern black nightshade	<i>Solanum ptycanthum</i>
Kochia	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>
Redroot pigweed	<i>Amaranthus retroflexus</i>
Russian thistle	<i>Salsola kali var. tenuifolia</i>
Wild buckwheat	<i>Polygonum convolvulus</i>
<b>Annual Grass Weeds</b>	
Annual bluegrass	<i>Poa annua</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Canarygrass	<i>Phalaris canariensis</i>
Green foxtail	<i>Setaria viridis</i>
Large crabgrass	<i>Digitaria sanguinalis</i>
Volunteer barley	<i>Hordeum sp.</i>
Volunteer wheat	<i>Triticum sp.</i>
Wild oats**	<i>Avena fatua</i>
Yellow foxtail	<i>Setaria glauca</i>

\*\* Control of wild oats has been inconsistent in Minnesota and North Dakota

<b>Willowood Ethofumesate 4SC alone will also reduce competition from these HARD-TO-CONTROL weeds:</b>	
Annual Sowthistle	<i>Sonchus loeraceus</i>
Puncturevine	<i>Tribulus terrestris</i>
Shepherdspurse	<i>Capsella bursa-pastoris</i>
Purple nutsedge	<i>Cyperus rotundus</i>
Yellow nutsedge	<i>Cyperus esculentus</i>

Apply tank mixes only in specified regions or States and in accordance with directions on label.

### APPLICATION INSTRUCTIONS

**Table Beets Grown Under Rainfall:** Apply Willowood Ethofumesate 4SC alone or in a tank mix preemergence at time of planting or shortly after, but prior to weed germination. Willowood Ethofumesate 4SC or tank mix does not require mechanical soil incorporation provided that sufficient rainfall occurs shortly following application to activate the chemical. One-half inch of rainfall is usually adequate for activation. In areas where rainfall can be marginal for activation, it is advised that Willowood Ethofumesate 4SC be applied before or at the time of planting and incorporated into the soil.

**Table Beets Grown Under Furrow Irrigation:** Apply Willowood Ethofumesate 4SC alone or in a tank mix to the soil surface preplant or at time of planting, but prior to weed germination. Where table beets are grown in beds, apply Willowood Ethofumesate 4SC or tank mix after bedding and incorporate. Since Willowood Ethofumesate 4SC must have moisture to control weeds effectively, irrigate until tops of beds are thoroughly wetted.

**Table Beets Grown Under Sprinkler Irrigation:** Apply Willowood Ethofumesate 4SC alone or in tank mix preemergence at time of planting or shortly after, and irrigate prior to crop and weed germination. Repeat irrigation as necessary to maintain good moisture in upper soil layer. Apply at least one-half inch of water during first irrigation. Do not mechanically incorporate Willowood Ethofumesate 4SC into the soil under sprinkler irrigation.

**Cultural Practices Following Application:** When properly applied, Willowood Ethofumesate 4SC alone can provide up to 6 weeks control of susceptible species. When cultivating fields in which Willowood Ethofumesate 4SC has been banded, care should be exercised to minimize the movement of untreated soil into the treated band. Where a broadcast application has been made, do not cultivate deeper than two inches, as this reduces the effectiveness of Willowood Ethofumesate 4SC.

**WILLOWOOD ETHOFUMESATE 4SC ALONE  
DOSAGE FOR BROADCAST APPLICATIONS**

Table Beet Stage	WILLOWOOD ETHOFUMESATE 4SC FLUID OUNCES/ACRE BROADCAST
Preemergence	60
Postemergence:	
2-Leaf	5.25
4-Leaf	5.25
6-Leaf to 8-Leaf	10.5

**PREPLANT AND PREEMERGENCE USE RESTRICTIONS**

Willowood Ethofumesate 4SC applied alone or in tank mixes according to label directions and under normal growing conditions may cause temporary leaf fusion, distortion and stunting. Crop injury may occur during early growth when crop is stressed due to herbicide residue carryover, highly saline or alkaline soils, unusually cold and wet weather or improperly placed fertilizers or soil insecticides.

Unusually dry, windy weather, which dries the upper soil layer, following application of Willowood Ethofumesate 4SC, may reduce effectiveness.

DO NOT OVERTREAT.

**Crop Planting Restrictions:** If crop is lost due to unfavorable growth conditions following treatment, do not replant with crops other than sugar beets, table beets, garlic, onions, shallots or ryegrass in treated land during the same season. If fields are replanted to sugar beets, reseed into treated band. Do not retreat field with preemergence rates of Willowood Ethofumesate 4SC in the same season.

**RATE RESTRICTION**

Do not apply more than a total of 1.5 lbs. a.i. (3 pints of product) per acre per pre-emergent application to table beets. Do not apply more than 1.5 lbs. a.i. per acre per application. Do not apply more than one preemergent application per year.

For combined pre- and postemergent applications, do not exceed a total of 2.6 lbs. a.i. (80 ounces of product) per year. If one preemergent application is made at 1.5 lb a.i./A, do not make more than two postemergent applications at 0.33 lb a.i./A per year. Do not make more than three postemergent applications at the lower rate of 0.16 lb a.i./A per application. See Use Precautions for additional information on proper use.

**PREPLANT AND PREEMERGENCE APPLICATIONS**

**Soil Preparation:** The soil should be prepared according to good agricultural practices. Large clods can reduce the effectiveness of Willowood Ethofumesate 4SC and tank mixes. All existing vegetative growth should be thoroughly worked into the soil before treatment.

**Spray Equipment:** Apply Willowood Ethofumesate 4SC alone or in tank mixes to the soil using standard low pressure (20 to 50 psi) spray equipment. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Do not use smaller than 50-mesh strainer. Uniformly apply the specified rates of Willowood Ethofumesate 4SC or tank mixes in 10 to 60 gallons of water per acre on a broadcast basis. Avoid overlaps since crop injury may result. When applying Willowood Ethofumesate 4SC or tank mixes in a band, check to make certain that the band width is accurate for the dosage rate being applied.

The spray tank and lines should be thoroughly cleaned and rinsed prior to using Willowood Ethofumesate 4SC.

**POSTEMERGENCE APPLICATION**

**Product Information**

Willowood Ethofumesate 4SC applied postemergence broadens and enhances the control of weeds.

**Mixing the Spray:** Add Willowood Ethofumesate 4SC to the water in the spray while agitating the spray solution thoroughly.

**Spray Equipment:** Apply the mixture using standard low pressure (20-60 psi) spray equipment. Ensure that the sprayer is thoroughly clean. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Uniformly apply the specified rate in 10-40 gallons of water per acre on a broadcast basis or 5-10 gallons of water per acre in a band. Avoid overlaps, since crop injury may result. When applying in a band, check to make certain that the band width is accurate for the dosage rate being applied. Do not use strainer smaller than 50-mesh.

**Moisture Following Application/Residual Weed Control:** Rainfall or sprinkler irrigation within 6 hours of spraying may reduce weed control; however, with preemergence rates, moisture after this period of time is advantageous for moving Willowood Ethofumesate 4SC into the top layer of soil where it can be absorbed by the roots of sprayed and germinating weeds to provide optimum control. One-half inch or more of sprinkler irrigation is required to activate Willowood Ethofumesate 4SC on most soil types.

Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

**WILLOWOOD ETHOFUMESATE 4SC MAY CAUSE CROP INJURY OR STAND LOSS IF THE CROP IS UNDER STRESS FROM ONE OR MORE OF THE FOLLOWING CONDITIONS:**

- Rapid climatic changes from cool, overcast days, to hot (80°F or over), bright days. When the air temperature is, or is likely to be, above 80°F on the day of spraying, application should be made in the evening when the temperature is lower.
- Frost within seven days following treatment
- Windy or drought conditions
- Use of a preplant or preemergence herbicide or other chemicals
- Insect or disease injury
- Close cultivation

**Postemergent Restrictions**

DO NOT OVERTREAT.

Do not spray while dew is present.

Do not allow spray drift to contact adjacent crops which may be injured by spray drift.

**Precautions**

Rainfall or sprinkler irrigation within 6 hours of application may reduce weed kill.

If stress conditions are present, delay application until crop has recovered.

If Willowood Ethofumesate 4SC is applied on fields with heavy crop residue, such as from a previous corn crop, reduced weed control may occur.

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**ONION, DRY BULB; GARLIC, BULB; SHALLOT, BULB**

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**PRODUCT INFORMATION**

Willowood Ethofumesate 4SC is a selective herbicide for use in onion, garlic and shallot for the control of the weed species listed below.

Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

**WEED SPECIES CONTROLLED**

<b>Annual Broadleaf Weeds</b>	
Black nightshade	<i>Solanum nigrum</i>
Common chickweed	<i>Stellaria media</i>
Common lambsquarters	<i>Chenopodium album</i>
Common purslane	<i>Portulaca oleracea</i>
Eastern black nightshade	<i>Solanum ptycanthum</i>
Kochia	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>
Redroot pigweed	<i>Amaranthus retroflexus</i>
Russian thistle	<i>Salsola kali var. tenuifolia</i>
Wild buckwheat	<i>Polygonum convolvulus</i>

<b>Annual Grass Weeds</b>	
Annual bluegrass	<i>Poa annua</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Canarygrass	<i>Phalaris canariensis</i>
Green foxtail	<i>Setaria viridis</i>
Large crabgrass	<i>Digitaria sanguinalis</i>
Volunteer barley	<i>Hordeum sp.</i>
Volunteer wheat	<i>Triticum sp.</i>
Wild oats**	<i>Avena fatua</i>
Yellow foxtail	<i>Setaria glauca</i>

\*\*Control of wild oats has been inconsistent in Minnesota and North Dakota

**Willowood Ethofumesate 4SC alone will also reduce competition from these HARD-TO-CONTROL weeds:**

Annual sowthistle	<i>Sonchus oleraceus</i>
Puncturevine	<i>Tribulus terrestris</i>
Shepherdspurse	<i>Capsella bursa-pastoris</i>
Purple nutsedge	<i>Cyperus rotundus</i>
Volunteer potato	<i>Solanum tuberosum</i>
Yellow nutsedge	<i>Cyperus esculentus</i>

Apply tank mixes only in specified regions or States and in accordance with directions on label.

**APPLICATION INSTRUCTIONS**

**Onion, garlic and shallot grown under rainfall:** Apply Willowood Ethofumesate 4SC alone or in a tank mix preemergence at time of planting or shortly after, but prior to weed germination. Willowood Ethofumesate 4SC or tank mix does not require mechanical soil incorporation provided that sufficient rainfall occurs shortly following application to activate the chemical. One-half inch of rainfall is usually adequate for activation. In areas where rainfall can be marginal for activation, it is advised that Willowood Ethofumesate 4SC be applied before or at time of planting and incorporated into the soil.

**Onion, garlic and shallot grown under furrow irrigation:** Apply Willowood Ethofumesate 4SC alone or in a tank mix to the soil surface preplant or at time of planting, but prior to weed germination. Where these crops are grown in beds, apply Willowood Ethofumesate 4SC or tank mix after bedding and incorporate. Since Willowood Ethofumesate 4SC must have moisture to control weeds effectively, irrigate until tops of beds are thoroughly wetted.

**Onion, garlic and shallot grown under sprinkler irrigation:** Apply Willowood Ethofumesate 4SC alone or in tank mix preemergence at time of planting or shortly after, and irrigate prior to crop and weed germination. Repeat irrigation as necessary to maintain good moisture in upper soil layer. Apply at least one-half inch of water during first irrigation. Do not mechanically incorporate Willowood Ethofumesate 4SC into the soil under sprinkler irrigation.

**CULTURAL PRACTICES FOLLOWING APPLICATION:** When properly applied, Willowood Ethofumesate 4SC alone can provide up to 6 weeks of control of susceptible weed species. When cultivating fields in which Willowood Ethofumesate 4SC has been banded, care should be exercised to minimize the movement of untreated soil into the treated band. Where a broadcast application has been made, do not cultivate deeper than two inches, as this reduces the effectiveness of Willowood Ethofumesate 4SC.

**WILLOWOOD ETHOFUMESATE 4SC ALONE**

**DOSAGE FOR BROADCAST APPLICATIONS TO ONION, GARLIC AND SHALLOT**

<b>Use Pattern</b>	<b>WILLOWOOD ETHOFUMESATE 4SC FLUID OUNCES/ACRE BROADCAST</b>
Preemergence, soil surface Coarse Soils (sand, loamy sand, sandy loam)* Medium and Fine Soils**	16 32
Postemergence Up to 4 foliar applications at evenly spaced intervals, with last application 30 (+/- 2) days before harvest	16

\* On coarse soils: Do not exceed 48 fluid ounces (0.375 gallon) of product per year.

\*\* On medium and fine textured soils: Do not exceed 96 fluid ounces (0.75 gallon) of product per year.

## PREPLANT AND PREEMERGENCE USE RESTRICTIONS

Willowood Ethofumesate 4SC applied alone or in tank mixes according to label directions and under normal growing conditions may cause temporary leaf fusion, distortion and stunting. Crop injury may occur during early growth when crop is stressed due to herbicide residue carryover, high saline or alkaline soils, unusually cold and wet weather or improperly placed fertilizers or soil insecticides.

Unusually dry, windy weather, which dries the upper soil layer, following application of Willowood Ethofumesate 4SC, may reduce effectiveness.

DO NOT OVERTREAT.

**Crop Planting Restrictions:** If crop is lost due to unfavorable growth conditions following treatment, do not replant with crops other than sugar beets, table beets, garlic, onions, shallots or ryegrass in treated land during the same season. If fields are replanted to sugar beets, reseed into treated band. Do not retreat field with preemergence rates of Willowood Ethofumesate 4SC in the same season.

### Rate Restrictions

No more than a total of 0.75 gallon (6 pints; 3 lb a.i.) of Willowood Ethofumesate 4SC must be applied in a single year. For preemergent applications do not apply more than 1.0 lbs a.i./A per application. For postemergent applications, do not apply more than 0.5 lb a.i./A per application. Do not apply more than 4 postemergent applications at the maximum rate per year. Do not apply more often than 15 days apart. See *Use Precautions* for additional information on proper use.

## PREPLANT AND PREEMERGENCE APPLICATIONS

**Soil Preparation:** The soil should be prepared according to good agricultural practices. Large clods can reduce the effectiveness of Willowood Ethofumesate 4SC and tank mixes. All existing vegetative growth should be thoroughly worked into the soil before treatment.

**Spray Equipment:** Apply Willowood Ethofumesate 4SC alone or in tank mixes to the soil using standard low pressure (20 to 50 psi) spray equipment. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Do not use smaller than 50-mesh strainer. Uniformly apply the specified rates of Willowood Ethofumesate 4SC or tank mixes in 10 to 60 gallons of water per acre on a broadcast basis. Avoid overlaps since crop injury may result. When applying Willowood Ethofumesate 4SC or tank mixes in a band, check to make certain that the band width is accurate for the dosage rate being applied.

The spray tank and lines should be thoroughly cleaned and rinsed prior to using Willowood Ethofumesate 4SC.

## POSTEMERGENCE APPLICATION

### Product Information

Willowood Ethofumesate 4SC applied postemergence broadens and enhances the control of weeds.

**Mixing the spray:** Add Willowood Ethofumesate 4SC to the water in the spray tank while agitating the spray solution thoroughly.

**Spray Equipment:** Apply the mixture using standard low pressure (20-60 psi) spray equipment. Ensure that the sprayer is thoroughly clean. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Uniformly apply the specified rate in 10-40 gallons of water per acre on a broadcast basis or 5-10 gallons of water per acre in a band. Avoid overlaps, since crop injury may result. When applying in a band, check to make certain that the band width is accurate for the dosage rate being applied. Do not use strainer smaller than 50-mesh.

**Moisture following Application/Residual Weed Control:** Rainfall or sprinkler irrigation within 6 hours of spraying may reduce weed control; however, with preemergence rates, moisture after this period of time is advantageous for moving Willowood Ethofumesate 4SC into the top layer of soil where it can be absorbed by the roots of sprayed and germinating weeds to provide optimum control. One-half inch or more of sprinkler irrigation is required to activate Willowood Ethofumesate 4SC on most soil types.

Residual control of weeds is dependent upon soil moisture conditions, rate of herbicide used, and texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

WILLOWOOD ETHOFUMESATE 4SC MAY CAUSE CROP INJURY OR STAND LOSS IF THE CROP IS UNDER STRESS FROM ONE OR MORE OF THE FOLLOWING CONDITIONS:

- Rapid climatic changes from cool, overcast days, to hot (80°F or over), bright days. When the air temperature is, or is likely to be, above 80°F on the day of spraying, application should be made in the evening when the temperature is lower.
- Frost within seven days following treatment
- Windy or drought conditions
- Use of preplant or preemergence herbicide or other chemicals
- Insect or disease injury
- Close cultivation

If stress conditions are present, delay application until crop has recovered.

### Restrictions

DO NOT OVERTREAT.

Do not spray while dew is present.

Do not allow spray drift to contact adjacent crops which may be injured by spray drift.

### Precautions

Rainfall or sprinkler irrigation within 6 hours of application may reduce weed kill.

If Willowood Ethofumesate 4SC is applied on fields with heavy crop residue, such as from a previous corn crop, reduced weed control may occur.

## CARROT (For Use in Washington and Oregon Only)

### PRODUCT INFORMATION

Willowood Ethofumesate 4SC is a selective herbicide for use in carrot for the control of volunteer potatoes and the weed species listed below.

Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

### WEED SPECIES CONTROLLED

<b>Annual Broadleaf Weeds</b>	
Black nightshade	<i>Solanum nigrum</i>
Common chickweed	<i>Stellaria media</i>
Common lambsquarters	<i>Chenopodium album</i>
Common purslane	<i>Portulaca oleracea</i>
Kochia	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>
Redroot pigweed	<i>Amaranthus retroflexus</i>
Russian thistle	<i>Salsola kali var. tenuifolia</i>
Wild buckwheat	<i>Polygonum convolvulus</i>
<b>Annual Grass Weeds</b>	
Annual bluegrass	<i>Poa annua</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Canarygrass	<i>Phalaris canariensis</i>
Green foxtail	<i>Setaria viridis</i>
Large crabgrass	<i>Digitaria sanguinalis</i>
Volunteer barley	<i>Hordeum sp.</i>
Volunteer wheat	<i>Triticum sp.</i>
Wild oats	<i>Avena fatua</i>
Yellow foxtail	<i>Setaria glauca</i>
<b>Willowood Ethofumesate 4SC alone will also reduce competition from these HARD-TO-CONTROL weeds:</b>	
Annual Sowthistle	<i>Sonchus oleraceus</i>
Puncturevine	<i>Tribulus terrestris</i>
Shepherdspurse	<i>Capsella bursa-pastoris</i>
Purple nutsedge	<i>Cyperus rotundus</i>
Volunteer potato	<i>Solanum tuberosum</i>
Yellow nutsedge	<i>Cyperus esculentus</i>

Apply tank mixes only in specified regions or States and in accordance with directions on label.

## APPLICATION INSTRUCTIONS

**Carrot grown under rainfall:** Apply Willowood Ethofumesate 4SC alone or in a tank mix preemergence at time of planting or shortly after, but prior to weed germination. Willowood Ethofumesate 4SC or tank mix does not require mechanical soil incorporation provided that sufficient rainfall occurs shortly following application to activate the chemical. One-half inch of rainfall is usually adequate for activation. In areas where rainfall can be marginal for activation, it is advised that Willowood Ethofumesate 4SC be applied before or at the time of planting and incorporated into the soil.

**Carrot grown under furrow irrigation:** Apply Willowood Ethofumesate 4SC alone or in a tank mix to the soil surface preplant or at time of planting, but prior to weed germination. Where carrots are grown in beds, apply Willowood Ethofumesate 4SC or tank mix after bedding and incorporate. Since Willowood Ethofumesate 4SC must have moisture to control weeds effectively, irrigate until tops of beds are thoroughly wetted.

**Carrot grown under sprinkler irrigation:** Apply Willowood Ethofumesate 4SC alone or in tank mix preemergence at time of planting or shortly after, and irrigate prior to crop and weed germination. Repeat irrigation as necessary to maintain good moisture in upper soil layer. Apply at least one-half inch of water during first irrigation. Do not mechanically incorporate Willowood Ethofumesate 4SC into the soil under sprinkler irrigation.

**Cultural practices following application:** When properly applied, Willowood Ethofumesate 4SC alone can provide up to 6 weeks control of susceptible weed species. When cultivating fields in which Willowood Ethofumesate 4SC has been banded, care should be exercised to minimize the movement of untreated soil into the treated band. Where a broadcast application has been made, do not cultivate deeper than two inches, as this reduces the effectiveness of Willowood Ethofumesate 4SC.

### WILLOWOOD ETHOFUMESATE 4SC

#### DOSAGE FOR BROADCAST APPLICATIONS TO CARROT

Use Pattern	WILLOWOOD ETHOFUMESATE 4SC FLUID OUNCES/ACRE BROADCAST
Preemergence, soil surface Coarse Soils (sand, loamy sand, sandy loam) Medium and Fine soils	48 64
Postemergence 2-Leaf to 4 Leaf Stage	64

#### PREPLANT AND PREEMERGENCE USE RESTRICTIONS

**Restrictions:** Do not exceed a total of 128 fluid ounces (4 lb a.i.) of product per year.

For pre- and postemergent applications do not apply more than 1.0 lbs a.i./A per application. For pre- and postemergent applications, do not apply more than 2 lb a.i./A per year. Do not apply more than one preemergent and one postemergent application at the maximum rate per year. Do not apply more often than 14 days apart.

Willowood Ethofumesate 4SC applied alone or in tank mixes according to label directions and under normal growing conditions may cause temporary leaf fusion, distortion and stunting. Crop injury may occur during early growth when crop is stressed due to herbicide residue carryover, highly saline or alkaline soils, unusually cold and wet weather or improperly placed fertilizers or soil insecticides.

Unusually dry, windy weather, which dries the upper soil layer, following application of Willowood Ethofumesate 4SC, may reduce effectiveness.

DO NOT OVERTREAT.

**Crop Planting Restrictions:** If crop is lost due to unfavorable growth conditions following treatment, do not replant with crops other than sugar beets, table beets, carrots, garlic, onions, shallots, or ryegrass in treated land during the same season. If fields are replanted to sugar beets, reseed into treated band. Do not retreat field with preemergence rates of Willowood Ethofumesate 4SC in the same season.

See Use Precautions for additional information on proper use.

#### PREPLANT AND PREEMERGENCE APPLICATIONS

**Soil Preparation:** The soil should be prepared according to good agricultural practices. Large clods can reduce the effectiveness of Willowood Ethofumesate 4SC and tank mixes. All existing vegetative growth should be thoroughly worked into the soil before treatment.

**Spray Equipment:** Apply Willowood Ethofumesate 4SC alone or in tank mixes to the soil using standard low pressure (20 to 50 psi) spray equipment. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Do not use smaller than 50 mesh strainer. Uniformly apply the specified rates of Willowood Ethofumesate 4SC or tank mixes in 10 to 60 gallons of water per acre on a broadcast basis. Avoid overlaps since crop injury may result. When applying Willowood Ethofumesate 4SC or tank mixes in a band, check to make



certain that the band width is accurate for the dosage rate being applied.

The spray tank and lines should be thoroughly cleaned and rinsed prior to using Willowood Ethofumesate 4SC.

## **POSTEMERGENCE APPLICATION**

### **Product Information**

Willowood Ethofumesate 4SC applied postemergence broadens and enhances the control of weeds.

**Mixing the Spray:** Add Willowood Ethofumesate 4SC to the water in the spray while agitating the spray solution thoroughly.

**Spray Equipment:** Apply the mixture using standard low pressure (20-60 psi) spray equipment. Ensure that the sprayer is thoroughly clean. Spray equipment should be carefully calibrated before use and checked frequently during application to see that it is functioning properly. Uniformly apply the specified rate in 10-40 gallons of water per acre on a broadcast basis or 5-10 gallons of water per acre in a band. Avoid overlaps, since crop injury may result. When applying in a band, check to make certain that the band width is accurate for the dosage rate being applied. Do not use strainer smaller than 50-mesh.

**Moisture Following Application/Residual Weed Control:** Rainfall or sprinkler irrigation within 6 hours of spraying may reduce weed control, however, with preemergence rates, moisture after this period of time is advantageous for moving Willowood Ethofumesate 4SC into the top layer of soil where it can be absorbed by the roots of sprayed and germinating weeds to provide optimum control. One-half inch or more of sprinkler irrigation is required to activate Willowood Ethofumesate 4SC on most soil types.

Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter increases.

WILLOWOOD ETHOFUMESATE 4SC MAY CAUSE CROP INJURY OR STAND LOSS IF THE CROP IS UNDER STRESS FROM ONE OR MORE OF THE FOLLOWING CONDITIONS:

- Rapid climatic changes from cool, overcast days, to hot (80°F or over), bright days. When the air temperature is, or is likely to be, above 80°F on the day of spraying, application should be made in the evening when the temperature is lower.
- Frost within seven days following treatment
- Windy or drought conditions
- Use of preplant or preemergence herbicide or other chemicals
- Insect or disease injury
- Close cultivation

If stress conditions are present, delay application until crop has recovered.

Rainfall or sprinkler irrigation within 6 hours of application may reduce weed kill.

If Willowood Ethofumesate 4SC is applied on fields with heavy crop residue, such as from a previous corn crop, reduced weed control may occur.

### **Restrictions**

Do not allow spray drift to contact adjacent crops which may be injured by spray drift.

Do not spray while dew is present.

**GRASS SEED AND COMMERCIAL SOD (For use in California, Idaho, Nevada, Oregon, and Washington only)  
AND TURF (Not for Use in California)**

**Use Restrictions for Grasses and Commercial and Ornamental Sod**

Use Willowood Ethofumesate 4SC only as directed at the specified rates (DO NOT OVERAPPLY).

- Avoid spray overlap or turf injury may occur.
- Use of a spray colorant or indicator in the spray tank is instructed so that spray pattern overlapping can be avoided.
- Do not apply with flood jet nozzles and hand-held sprayers, since treatments may not be uniform.
- Do not apply this product through any type of irrigation system.
- Willowood Ethofumesate 4SC application is most effective on healthy, vigorously growing turf.
- Willowood Ethofumesate 4SC may be applied to residential lawns by licensed or certified applicators. Willowood Ethofumesate 4SC is not intended for use by home-owners.
- Overseeding is directed in conjunction with Willowood Ethofumesate 4SC applications to achieve conversion to desired turfgrass species and to avoid stand thinning due to annual bluegrass loss.
- When overseeding, use the rate of Willowood Ethofumesate 4SC specified for the overseeded species. In mixed stands of established turfgrasses, use the rate specified for the least tolerant species.
- Do not apply Willowood Ethofumesate 4SC within 8 weeks following the application of a Plant Growth Regulator. Willowood Ethofumesate 4SC program may be initiated on creeping bentgrass 3 weeks after a single application of PRIMO® has been applied.
- Willowood Ethofumesate 4SC application is specified for golf course fairways, roughs, and tees but at fairway-height only. Do not apply to putting greens.
- Do not apply Willowood Ethofumesate 4SC to zoysiagrass and hard or fine fescue; serious injury may result.
- For sod farm turf: Do not harvest treated sod for 3 days following application.
- Do not graze livestock on treated turf.
- Do not feed treated grass clippings to livestock.

**RYEGRASS, TALL FESCUE, BENTGRASS, AND KENTUCKY BLUEGRASS SEED CROPS  
(For use in California, Idaho, Nevada, Oregon, and Washington only)**

**PRODUCT INFORMATION**

Willowood Ethofumesate 4SC is a selective herbicide for use in ryegrass, tall fescue, and bentgrass seed crops in California, Idaho, Nevada, Oregon, and Washington. It effectively controls or reduces competition from those weed species listed below. Willowood Ethofumesate 4SC may be applied preemergence to new seedlings of annual or perennial ryegrass or postemergence to perennial ryegrass, tall fescue, or bentgrass. Application to bentgrass is restricted to plantings which have been established for one year or longer. Soil should be moist at time of application. Willowood Ethofumesate 4SC is less effective when applied to dry soil. Rainfall or overhead irrigation shortly after application is necessary for activation.

Residual control of weeds is dependent upon soil moisture conditions; rates of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as the soil texture becomes finer and organic matter/thatch increases.

**WEEDS CONTROLLED**

Annual bluegrass	<i>Poa annua</i>
Seedling Rattail fescue	<i>Festuca myuros</i>
Seedling volunteer wheat	<i>Triticum</i> spp.
Seedling volunteer barley	<i>Hordeum</i> spp.
Soft chess	<i>Bromus mollis</i>
Seedling Wild oats	<i>Avena fatua</i>
Downy brome	<i>Bromus tectorum</i>
Common chickweed	<i>Stellaria media</i>
Common vetch	<i>Vicia sativa</i>
Common velvetgrass	<i>Holcus lanatus</i>
Mannagrass	<i>Glyceria</i> spp.
Barnyardgrass	<i>Echinochloa crus-galli</i>
Canarygrass	<i>Phalaris canariensis</i>
Green foxtail	<i>Setaria viridis</i>
Large crabgrass	<i>Digitaria sanguinalis</i>
Yellow foxtail	<i>Setaria glauca</i>

**Spray equipment:** Use a fixed-boom power sprayer properly calibrated to a constant speed and rate of delivery. Do not use smaller than 50-mesh strainer. Avoid overlapping of spray swath. Shut off boom while starting, turning or stopping to avoid overlapping. Apply in 10 to 50 gallons of water per acre at low pressure (20 to 50 psi).

**Soil preparation:** A firm, fine and level seedbed free of trash and vegetative matter will provide best results from preemergence applications. Large clods can reduce effectiveness of Willowood Ethofumesate 4SC. All existing vegetative growth should be thoroughly worked into the soil before treatment.

**NEW SEEDINGS OF ANNUAL OR PERENNIAL RYEGRASS**

**Before weed emergence:** Apply Willowood Ethofumesate 4SC after seeding and prior to weed emergence. For best results apply to moist soil. Apply 1 1/2 to 3 pints per acre. Use the lower rate for control of common chickweed. For control of rattail fescue, wild oats, and volunteer cereals and other weeds listed, use 2 1/4 to 3 pints per acre.

**After weed emergence:** Apply Willowood Ethofumesate 4SC at earliest possible weed growth stage but not later than the 4-leaf stage. Rattail fescue, wild oats, and volunteer cereals which are more difficult to control, must be treated no later than the 2-leaf stage. Apply 2 1/4 to 3 pints per acre. Use the highest rate where rattail fescue, wild oats, and volunteer cereals are present and where weed infestation is heavy.

**NEW SEEDINGS OF FALL-PLANTED PERENNIAL RYEGRASS AND TALL FESCUE TREATED WITH DIURON PLUS CHARCOAL**

**Timing of application:** Apply Willowood Ethofumesate 4SC following crop emergence and after sufficient rainfall and/or overhead irrigation has occurred to dissipate the charcoal band (approximately 4 inches). Use dosage rates listed in Dosage Table 10. Surface debris may result in reduced weed control. Failure to allow for complete dissipation of the charcoal band may result in reduced weed control within the crop row. For best results, apply Willowood Ethofumesate 4SC to a moist soil surface.

Before using diuron, read the diuron label for rate directions, timing of applications, directions for use, and precautionary statements. Do not exceed maximum dosage rates for either herbicide.

NOTE: Do not apply Willowood Ethofumesate 4SC when crop shows diuron injury.

**DOSAGE TABLE**

Crop	Rate Per Acre	Remarks
Perennial ryegrass and tall fescue	1 1/2 to 3 pints	For effective control, annual bluegrass must be treated before the 4-leaf stage; rattail fescue, wild oats, and volunteer wheat must be treated before the 2-leaf stage. Use the lower rate for control of annual bluegrass and common chickweed; use the higher rate for control of rattail fescue, wild oats, and other weeds listed.

**After weed emergence:** Apply Willowood Ethofumesate 4SC at earliest possible weed growth stage but not later than the 4-leaf stage. Rattail fescue, wild oats, and volunteer cereals which are more difficult to control, must be treated no later than the 2-leaf stage. Apply 2 1/4 to 3 pints per acre. Use the highest rate where rattail fescue, wild oats, and volunteer cereals are present and where weed infestation is heavy.

**ESTABLISHED STANDS OF PERENNIAL RYEGRASS AND TALL FESCUE**

**Before weed emergence:** Apply Willowood Ethofumesate 4SC at 2 1/4 to 3 pints per acre prior to weed emergence. Use higher rate where rattail fescue, wild oats, and volunteer cereals are expected to be a problem. For best results, apply to moist soil. Crop residue and debris will reduce effectiveness of treatment and should be removed or destroyed.

**After weed emergence:** Apply Willowood Ethofumesate 4SC at earliest possible weed growth stage but not later than the 4-leaf stage. Rattail fescue, wild oats, and volunteer cereals which are more difficult to control, must be treated no later than the 2-leaf stage. Apply 2 1/4 to 3 pints per acre. Use the higher rate where rattail fescue, wild oats, and volunteer cereals are present. Where weed pressure is very heavy and rattail fescue is at the maximum stage of growth for treating, a rate of 3 pints of Willowood Ethofumesate 4SC is specified.

**ESTABLISHED STANDS OF BENTGRASS**

Apply only to well-established stands which have been seeded for not less than 12 months. Straw from previous crop must be removed or destroyed. Failure to do so may result in reduced weed control.

**Before weed emergence:** Apply Willowood Ethofumesate 4SC at 1 1/2 to 3 pints per acre prior to weed emergence. Use higher rate where rattail fescue, wild oats, and volunteer cereals are expected to be a problem. For best results, apply to moist soil.

**After weed emergence:** Apply Willowood Ethofumesate 4SC at earliest possible weed growth stage, but no later than the 4-leaf stage. Rattail fescue, wild oats, and volunteer cereals which are more difficult to control, must be treated no later than the 2-leaf stage. Apply at the rate of 1 1/2 to 3 pints per acre. Use higher rate when rattail fescue, wild oats, and

volunteer cereals are a problem. Do not apply more than 3 pints (1.5 lb a.i.) of Willowood Ethofumesate 4SC per acre on bentgrass.

### **ESTABLISHED STANDS OF KENTUCKY BLUEGRASS (UNDER IRRIGATION ONLY)**

Apply only to established stands which have been seeded for at least 12 months. Crop residues, carbon, and debris should be removed. Failure to do so may result in reduced weed control. Willowood Ethofumesate 4SC is compatible with currently labeled grass seed herbicides. Consult your local fieldman for specified uses.

**Before weed emergence:** Apply Willowood Ethofumesate 4SC at 2 pints per acre prior to weed emergence. For best results, apply to moist soil. Apply at least 1/2 inch irrigation within 2 to 3 days after treatment to incorporate Willowood Ethofumesate 4SC.

**After weed emergence:** Apply Willowood Ethofumesate 4SC at 2 pints per acre at the earliest possible weed growth stage, but no later than the 4-leaf stage. For best results, apply to moist soil. Apply at least 1/2 inch irrigation within 2 to 3 days after treatment to incorporate Willowood Ethofumesate 4SC.

### **USE PRECAUTIONS**

Willowood Ethofumesate 4SC may cause stunting and stand reduction of newly seeded perennial ryegrass and tall fescue if the crop is planted late in the fall and subjected to adverse climatic conditions or pesticides which restrict normal growth.

If vegetative matter or stover from previous crop was burned, sufficient rainfall or overhead irrigation must have occurred to dissipate the charcoal residue remaining after burning prior to Willowood Ethofumesate 4SC treatment. Failure to allow for dissipation of charcoal residue may result in reduced weed control.

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### **COMMERCIAL SOD PRODUCTION**

**(For use in California, Idaho, Nevada, Oregon, and Washington only)**

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### **PRODUCT INFORMATION**

Willowood Ethofumesate 4SC is a selective herbicide for use in established and newly planted tall fescue and perennial ryegrass grown for sod in California, Idaho, Nevada, Oregon, and Washington. Willowood Ethofumesate 4SC may be applied preemergence or postemergence for the control of weed species listed below. Overhead irrigation or rainfall shortly after application is necessary for activation.

Do not harvest treated sod for 16 days following application.

Residual control of weeds is dependent upon soil moisture conditions; rate of herbicide used, and soil texture. The activity of Willowood Ethofumesate 4SC in the soil is reduced as soil texture becomes finer and organic matter/thatch increases.

### **WEEDS CONTROLLED**

Annual bluegrass	<i>Poa annua</i>
Large crabgrass	<i>Digitaria sanguinalis</i>
Green foxtail	<i>Setaria viridis</i>
Yellow foxtail	<i>Setaria glauca</i>
Canarygrass	<i>Phalaris canariensis</i>
Volunteer barley	<i>Hordeum sp.</i>
Volunteer wheat	<i>Triticum sp.</i>
Wild oats	<i>Avena fatua</i>
Rattail fescue	<i>Festuca myuros</i>
Common velvetgrass	<i>Holcus lanatus</i>
Mannagrass	<i>Glyceria sp.</i>
Downy brome	<i>Bromus tectorum</i>
Soft chess	<i>Bromus mollis</i>

**Spray equipment:** Use a fixed-boom power sprayer properly calibrated to a constant speed and rate of delivery. Do not use smaller than a 50-mesh strainer. Avoid overlapping of spray swath. Shut off boom while starting, turning, or stopping to avoid over-application. Make applications in 10 to 50 gallons of water per acre at low pressure (20 to 50 psi).

**Soil preparation:** All existing vegetative matter should be thoroughly worked into the soil surface before planting. Large clods, trash, or vegetative matter left on the soil surface will reduce effectiveness of the Willowood Ethofumesate 4SC treatment.

## **NEWLY PLANTED PERENNIAL RYEGRASS AND TALL FESCUE GROWN FOR SOD**

Apply Willowood Ethofumesate 4SC to newly planted areas when crop reaches the 2-to 3-leaf stage of growth. For best results, apply to moist soils.

**Before weed emergence:** Apply Willowood Ethofumesate 4SC at 2 1/4 to 3 pints per acre prior to weed emergence. Use the higher rate where rattail fescue, wild oats, and volunteer cereals are expected to be a problem.

**After weed emergence:** Apply Willowood Ethofumesate 4SC at earliest possible weed growth stage but no later than the 4-leaf stage. Rattail fescue, wild oats, and volunteer cereals which are more difficult to control, must be treated no later than the 2-leaf stage. Apply Willowood Ethofumesate 4SC at 2 1/4 to 3 pints per acre.

## **ESTABLISHED PERENNIAL RYEGRASS AND TALL FESCUE SOD**

For preemergence and/or postemergence control of susceptible weeds, apply Willowood Ethofumesate 4SC prior to weed emergence or at the earliest possible weed growth stage, but not later than the 4-leaf stage. For best results, apply to moist soils. Apply Willowood Ethofumesate 4SC at 2 1/4 to 3 pints per acre. Repeat applications at 4 to 8 week intervals may be needed to maintain weed control. Do not apply more than 1.5 lbs. a.i. (3 pints of product) per acre per year for perennial ryegrass and tall fescue sod.

## **USE PRECAUTIONS**

Willowood Ethofumesate 4SC may cause stunting, and stand reduction of newly seeded perennial ryegrass and tall fescue, if the crop is planted late in the fall and subjected to adverse climatic conditions or pesticides which restrict normal growth.

If vegetative matter or stover from previous crop was burned, sufficient rainfall or overhead irrigation must have occurred to dissipate the charcoal residue remaining after burning prior to Willowood Ethofumesate 4SC treatment. Failure to allow for dissipation of charcoal residue may result in reduced weed control.

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## **ORNAMENTAL TURF USE (Not for Use in California)**

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Willowood Ethofumesate 4SC is a herbicide intended for use on ornamental turf including golf courses, parks, cemeteries and homeowner or commercial lawns, and after overseeding specific grasses. It may be used on established perennial ryegrass, Kentucky bluegrass, creeping bentgrass, turf-type tall fescue, St. Augustinegrass, and dormant bermudagrass for the control and/or suppression of the annual grasses and broadleaf weeds listed in the tables below. Willowood Ethofumesate 4SC is intended for professional use only.

Willowood Ethofumesate 4SC has both preemergent and early (two-leaf stage) postemergence activity and works best in programs emphasizing both approaches. Willowood Ethofumesate 4SC application is most effective on healthy, vigorously growing turf.

## **WEED SPECIES CONTROLLED**

### **PREEMERGENCE**

#### **Annual Grasses**

Barnyardgrass (*Echinochloa crus-galli*)  
Bluegrass, annual (*Poa annua*)  
Canarygrass (*Phalaris canariensis*)  
Crabgrass, large (*Digitaria sanguinalis*)  
Crabgrass, smooth (*Digitaria ischaemum*)  
Foxtail, green (*Setaria viridis*)  
Foxtail, yellow (*Setaria glauca*)

#### **Annual Broadleaves**

Burclover (*Medicago sp.*)  
Chickweed, common (*Stellaria media*)  
Purslane, common (*Portulaca oleracea*)  
Pigweed, redroot (*Amaranthus retroflexus*)  
Willowood Ethofumesate 4SC will also reduce competition from:  
Nutsedge, purple (*Cyperus rotundus*)  
Nutsedge, yellow (*Cyperus esculentus*)

### **POSTEMERGENCE**

#### **Annual Grasses**

Bluegrass, annual (*Poa annua*)

#### **Annual Broadleaves**

Chickweed, common (*Stellaria media*)  
Clover, white (*Trifolium repens*)

## PREEMERGENCE/EARLY POSTEMERGENCE

### Annual Grasses

Crabgrass, large (*Digitaria sanguinalis*)

Crabgrass, smooth (*Digitaria ischaemum*)

### RESTRICTIONS

- Willowood Ethofumesate 4SC is not intended for use by homeowners and must be applied to homeowner lawns by licensed or certified applicators.
- DO NOT OVER APPLY Willowood Ethofumesate 4SC. Follow the instructions in this label or damage to non-target turf may result.
- Do not apply more than a total of 1.5 lbs. ai (48 oz. product/A or 1.1 oz. product/1,000 sq. ft.) per year. Do not exceed the maximum single application rate or yearly maximum application rate of 48 oz./acre (1.5 lb a.i./A) (i.e. a split application of 24 oz./A once in the spring and once in the fall OR a single application of 48 oz./A in either the spring or the fall).
- Do not apply with hand-held or flood jet nozzles because treatments may not be uniform.
- Do not apply this product through any type of irrigation system.
- Delay application of Willowood Ethofumesate 4SC at least 8 weeks after application of a Plant Growth Regulator although a Willowood Ethofumesate 4SC program may be initiated on creeping bentgrass 3 weeks after a single application of PRIMO\* (trinexapac-ethyl) has been applied.
- Do not apply Willowood Ethofumesate 4SC to putting greens.
- Do not apply Willowood Ethofumesate 4SC to zoysiagrass and hard or fine fescue to avoid serious injury.

### PRECAUTIONS

- Spray overlap can cause turf injury due to over application. Use of a spray colorant or indicator is recommended so that spray overlap can be avoided.
- When using Willowood Ethofumesate 4SC, overseed to prevent stand thinning as a result of loss of annual bluegrass. Use the rate of Willowood Ethofumesate 4SC listed for the overseeded species when overseeding. In mixed stands of established turfgrasses, use the rate listed for the *least* tolerant species.

### Spray Equipment, Application, and Precautions

Use standard, low-pressure (20 to 50 psi) spray equipment to apply Willowood Ethofumesate 4SC. Calibrate spray equipment prior to use and frequently check the equipment during application. Use a spray indicator to aid in even application. Prior to and after applying Willowood Ethofumesate 4SC, thoroughly clean and rinse the spray tank and line.

### Varietal Tolerance

Ethofumesate (the active ingredient in Willowood Ethofumesate 4SC) has been used on the following turfgrass cultivars. However, Willowood Ethofumesate 4SC can be used on other cultivars. Prior to large-scale use of Willowood Ethofumesate 4SC on cultivars other than those listed below, test a small area for tolerance.

- **CREEPING BENTGRASS**- The following cultivars have shown good to excellent tolerance to Willowood Ethofumesate 4SC: Carmen, Cobra, Highland, Lopez, Mariner, National, Penncross, Providence, Putter, Southshore, SR1020, and Viper.  
Injury has been occasionally noted on Emerald, Penneagle, and Pennilinks cultivars.  
Willowood Ethofumesate 4SC may cause serious injury to Cohansey, Colonial, south German varieties, Egmont, Bardot, Tracenta, Allure, Astoria, and SR7100.
- **DORMANT BERMUDAGRASS**- Tifgreen, Tidwarf and Common bermudagrass are more susceptible to Willowood Ethofumesate 4SC than hybrid bermudagrass.
- **KENTUCKY BLUEGRASS**- Adelphi, American, Aspen, Asset, Challenger, Classic, Emundi, Huntsville, Georgetown, Glade, Haga, Julic, Liberty, Merit, Midnight, Monopoly, Mystic, Parade, Rugby, Sydsport, Touchdown. NOTE: DO NOT APPLY to Explorer, Limousine, Northstar, RAN I and Total Eclipse.
- **PERENNIAL RYEGRASS**- Acclaim, Blazer, Dasker, Derby, Elka, Fiesta, Goalie, Hunter, Linn, Loretta, Manhattan II, Palmer, Pennfine, Regal, Yorktown.
- **ST. AUGUSTINEGRASS**- Raleigh
- **TURF-TYPE FALL FESCUE**- America, Arid, Mustang
- For fall control of annual bluegrass, begin applications of Willowood Ethofumesate 4SC during the period of maximum weed germination and end as close to the first killing freeze as possible.
- Spring applications should be made during the period of maximum weed germination. Consult your weed science specialist or university extension service for the recommended application timing in your area. Spring applications are most effective following fall applications.

SEE CHART BELOW FOR USE RATES AND TIMINGS AND READ TEXT BELOW FOR SPECIFIC DIRECTIONS FOR EACH TYPE OF GRASS.

**Application Rates and Timings**

Turf Type	Primary Targets	Application Timing	Use Rate <sup>1</sup>		# of Apps <sup>5</sup>	Application Interval (Days)	Overseeding Safety Interval <sup>3</sup> (Weeks After Treatment)	Application Safety Interval <sup>4</sup> (Weeks After Emergence)
			Oz./ Acre	Oz./1,000 Sq. Ft.				
Creeping Bentgrass	Annual Bluegrass	Fall	24	9/16	0-2	21-28	4	4
		Spring <sup>2</sup>	24	9/16	0-2	21-28		
Kentucky Bluegrass	Annual Bluegrass	Fall	24	9/16	2	21-28	6	8
Ryegrass	Annual Bluegrass	Fall	32-48	3/4-1.1	0-1	N/A	1-2	1-2
		Spring			0-1	N/A		
St. Augustinegrass (Est. Turf)	Bermudagrass Suppression	Spring	24	9/16	2	21-28	N/A	N/A
Turf-Type Tall Fescue	Annual Bluegrass	Fall	24-48	3/4-1.1	1-2	21-28	0	2-3
Overseeded (ryegrass) Bermudagrass: Dormant Bermudagrass	Annual Bluegrass	Fall	24-48	9/16 – 1.1	1-2	21-28	N/A	N/A
Nondormant Bermudagrass	Annual Bluegrass	Fall	32-36	3/4-7/8	1	N/A	N/A	N/A

N/A= Not applicable.

<sup>1</sup> Apply Willowood Ethofumesate 4SC in 20 to 60 gallons of water per acre or 1 to 3 gallons of water per 1000 sq. ft.

<sup>2</sup> Only make spring applications after previous fall treatments.

<sup>3</sup> After the last treatment of Willowood Ethofumesate 4SC, the interval provided applies to overseeding of the specific grass on same type of grass to which Willowood Ethofumesate 4SC was applied.

<sup>4</sup> Willowood Ethofumesate 4SC may be applied to specific grass following seed emergence after the specified time interval.

<sup>5</sup> Do not exceed the maximum single application rate or yearly maximum application rate of 48 oz./acre (1.5 lb a.i./A) (i.e. a split application of 24 oz./A once in the spring and once in the fall OR a single application of 48 oz./A in either the spring or the fall).

## INSTRUCTIONS FOR SPECIFIC GRASS TYPES

### COOL SEASON TURFGRASSES

#### Creeping Bentgrass

Apply Willowood Ethofumesate 4SC to bentgrass as long as the turf is at a length typically found on fairways (or longer). When applying to bent-grass, use the following guidelines.

- Avoid using Willowood Ethofumesate 4SC in areas that are heavily shaded and/or poorly drained.
- Creeping bentgrass tolerance to Willowood Ethofumesate 4SC may be improved by tank mixing Willowood Ethofumesate 4SC with nitrogen fertilizer (controlled release or soluble) at a rate of 0.1 to 0.25 lb N per 10,000 ft<sup>2</sup>. This may also improve creeping bentgrass conversion in the areas treated.
- Control of annual bluegrass is best achieved by making two applications of Willowood Ethofumesate 4SC; one in the fall followed by one in the spring.
- Willowood Ethofumesate 4SC works best in the spring if applied after creeping bentgrass has resumed active growth and is fully green.

When overseeding with creeping bentgrass, use the following guidelines:

- After applying Willowood Ethofumesate 4SC, wait a minimum of 3-4 weeks before overseeding with bentgrass.
- When an area has been renovated or overseeded with bentgrass, do not apply Willowood Ethofumesate 4SC until 3-4 weeks after seedling emergence.

#### Kentucky Bluegrass

- Delay application of Willowood Ethofumesate 4SC to bluegrass until at least 8 weeks after emergence.
- Bluegrass overseeded with ryegrass may be treated with Willowood Ethofumesate 4SC 1-2 weeks after ryegrass emergence.

When overseeding with Kentucky Bluegrass use the following guidelines:

- Wait at least six weeks after the last Willowood Ethofumesate 4SC application before reseeding with Kentucky bluegrass.
- Note that sod quality during the spring may be diminished following the fall applications of Willowood Ethofumesate 4SC. Alternatives to fall application of Willowood Ethofumesate 4SC include seeding with dormant bluegrass in the late fall or to delay reseeding until the spring.

#### Perennial Ryegrass

Control of annual bluegrass in perennial ryegrass is easiest when it is newly emerged, and application of Willowood Ethofumesate 4SC is made during the primary period of annual bluegrass germination (and up to 30 days after annual bluegrass emergence) in the fall and/or spring. Consult your local Extension Service or university weed specialist for the date(s) that annual bluegrass germinates in your area.

- For best results, apply Willowood Ethofumesate 4SC at 24 oz./A (0.5 oz./1,000 sq. ft.) once in the fall and once in the spring.
- Application in the fall or spring will also reduce competition from selected broadleaf weeds and crabgrass.

When overseeding with perennial ryegrass, use the following guidelines:

- Wait 1-2 weeks (or until the seedlings are approximately 1" tall) before applying Willowood Ethofumesate 4SC to the seeded area.
- To the extent possible, thatch should be removed from the area being seeded as it can diminish the effectiveness of the Willowood Ethofumesate 4SC treatment.
- Do not apply mulch or straw to the seeded areas until after Willowood Ethofumesate 4SC has been applied.

#### Turf-Type Tall Fescue

Make Willowood Ethofumesate 4SC applications to turf-type tall fescue in the fall. If overseeding with turf-type tall fescue, application of Willowood Ethofumesate 4SC may be done at the same time as seeding.

### WARM SEASON TURFGRASSES

#### St. Augustinegrass (Established Turf)

Willowood Ethofumesate 4SC suppresses the development of actively growing Bermudagrass in established St. Augustine sod. Apply Willowood Ethofumesate 4SC to St. Augustinegrass in the spring and early summer to suppress Bermudagrass and Bermudagrass seedhead formation and/or for control of annual bluegrass.

Notes regarding applications to St. Augustinegrass:

- Do not treat St. Augustinegrass in the first six months after germination.
- Do not treat St. Augustinegrass that is under stress or injury to the turf may result.
- Temporary stunting and minor discoloration of St. Augustinegrass may occur after application. If the St. Augustinegrass shows signs of severe yellowing or stunting, discontinue applications.



Use the following guidelines when applying Willowood Ethofumesate 4SC to St. Augustinegrass:

- Begin Willowood Ethofumesate 4SC applications when Bermudagrass first breaks dormancy in the spring. Application timing is critical to achieve optimum results and will vary depending on location and temperature.
- For best results, make two applications of Willowood Ethofumesate 4SC at 24 oz./A (0.5 oz./1,000 sq. ft.) with the second application being made 21-28 days after the first application.
- To improve suppression, each application of Willowood Ethofumesate 4SC may be tank-mixed with (Atrazine at up to 2 lb ai/A for first application and 0.75 lb-1 lb ai/A triazine for second or third application).

### **Overseeded Dormant Bermudagrass**

Notes regarding applications to Bermudagrass:

- Do not make more than two applications at 24 oz./A (0.5 oz./1,000 sq. ft.) OR one application at 48 oz./A (1.0 oz./1,000 sq. ft.) of Willowood Ethofumesate 4SC when treating nondormant bermudagrass. Treatment to turf that is not fully dormant may cause early injury and/or delayed spring green-up.
- Application of Willowood Ethofumesate 4SC to bermudagrass that is stressed due to shade, poorly drained soils, and high traffic may result in increased turf injury. Avoid use of Willowood Ethofumesate 4SC or use lower rates under these conditions.

Use the following guidelines when applying Willowood Ethofumesate 4SC to Bermudagrass:

- To control annual bluegrass, make applications of Willowood Ethofumesate 4SC in late fall (ideally 1-2 weeks after emergence of overseeded perennial ryegrass) on overseeded bermudagrass.
- When Willowood Ethofumesate 4SC is applied in late November or early December, applications of 32-36 oz. per acre have shown acceptable control of annual bluegrass with minimum injury to nondormant (or predormant) bermudagrass. If lower rates are used, reduced annual bluegrass control should be expected. If higher rates are used, increased injury to Bermudagrass may occur.
- Willowood Ethofumesate 4SC should not be applied to Bermudagrass in the 4 weeks prior to breaking winter dormancy. Applications made to Bermudagrass in the 4 weeks prior to breaking dormancy may temporarily delay the normal start of active growth.

When overseeding bermudagrass, use the following guidelines:

- Common bermudagrass in fairways or roughs may be more susceptible to herbicide injury than hybrid bermudagrass.
- When making applications to nondormant bermudagrass, Willowood Ethofumesate 4SC should be kept within areas that are overseeded so that the ryegrass will mask any early injury or late transition in the spring that may occur.
- Using a higher than normal seeding rate may be desirable in order to minimize the appearance of thin turf.

### **Willowood Ethofumesate 4SC Mixtures with Fertilizers**

#### **Willowood Ethofumesate 4SC Impregnation on Dry Bulk Fertilizers**

Willowood Ethofumesate 4SC may be impregnated on many dry bulk fertilizers (See "1" below) and applied for the control of labeled grasses and broadleaf weeds on turf, and applied and incorporated into the soil before planting in sugar beets.

All Willowood Ethofumesate 4SC label and supplementary literature instructions and precautions regarding rates per acre, soil type, application, and other directions must be followed. All individual State regulations relating to dry bulk fertilizer blending, registration, labeling and application are the responsibility of the individual and/or company selling the Willowood Ethofumesate 4SC fertilizer mixtures. A minimum of 200 pounds and a maximum of 700 pounds of approved fertilizer ingredients (See "2" below) impregnated with the appropriate amount of Willowood Ethofumesate 4SC must be applied per acre. For impregnating the pesticide on dry fertilizers, use a closed rotary drum type mixer equipped with suitable spraying equipment. The spray nozzles should be positioned inside of the mixer to provide uniform spray coverage of the tumbling fertilizer. The Willowood Ethofumesate 4SC should be sprayed uniformly onto the fertilizer using a fine spray pattern.

The physical properties of fertilizers vary, particularly in liquid absorptive capacity. When absorptivity is sufficient, simple spray impregnation of the fertilizer with Willowood Ethofumesate 4SC provides a satisfactory dry mixture. If the absorptivity is not adequate, use of a highly absorptive powder is required to provide a dry, free-flowing mixture. Microcel E (Johns-Manville Products Corporation) is the recommended absorbent powder. It should be added separately and uniformly to the prepared pesticide/fertilizer mixture in a quantity that is sufficient to provide a suitably free-flowing mixture. Generally, less than 2% by weight of Microcel E is required.

The amount of Willowood Ethofumesate 4SC actually required in the formulation of specific fertilizer mixtures should be calibrated carefully for each production operation. This is necessary to ensure that the amount of Willowood Ethofumesate 4SC actually contained in the fertilizer mixture applied to the soil represents the correct dosage rate.

Bulk fertilizers impregnated with Willowood Ethofumesate 4SC should be applied immediately, NOT STORED.

**1. Approved dry fertilizer ingredients for use with Willowood Ethofumesate 4SC.**

**Willowood Ethofumesate 4SC Impregnation on Dry Bulk Fertilizers**

	<b>N</b>	<b>P</b>	<b>K</b>
Ammonium nitrate	34	0	0
Ammonium sulfate	21	0	0
Ammonium phosphate-sulfate	16	20	0
Diammonium phosphate	18	46	0
Monoammonium phosphate	11	56	0
Potassium chloride	0	0	60
Potassium sulfate	0	0	52
Single superphosphate	0	20	0
Triple superphosphate	0	46	0
Urea	45	0	0

<b>Willowood Ethofumesate 4SC Physical Data</b>	
Density	1.15 g/cm <sup>3</sup>
Pounds/gallon	9.60
Flashpoint	Non-combustible

**2. Rate Chart for the Impregnation of Dry Bulk Fertilizers with Willowood Ethofumesate 4SC:**

**Gallons of Willowood Ethofumesate 4SC per Ton of Dry Bulk Fertilizer**

<b>Fertilizer Rate lb/acre</b>	<b>2.25 pt./acre</b>	<b>Impregnation Rate 3 pt./acre</b>	<b>4.5 pt./acre</b>
200	2.80	3.75	5.63
250	2.25	3.00	4.50
300	1.88	2.50	3.75
350	1.59	2.16	3.19
400	1.41	1.88	2.81
450	1.25	1.69	2.50
500	1.13	1.50	2.25
550	1.03	1.38	2.06
600	0.94	1.25	1.88
650	0.87	1.13	1.75
700	0.80	1.08	1.62

**Willowood Ethofumesate 4SC with Liquid Fertilizer**

The following procedure is suggested for evaluation of physical compatibility of Willowood Ethofumesate 4SC in mixtures with liquid fertilizers for spray tank applications.

**Material Required**

1. Willowood Ethofumesate 4SC - components of tank sizes if intended for use
2. Liquid fertilizer to be used.
3. Adjuvant for fertilizer tank mix: Compex\* or E-Z Mix\*\*
4. Two (or more) one quart wide mouth containers with lids or stoppers
5. Measuring spoons (25 ml pipette or graduated cylinder provides more accurate measurement)
6. Measuring cup, 8 fl. oz. (237 ml)

\*Compex, Kalo Baloratories, Inc., Kansas City, MO

\*\*E-Z Mix, United Agri-Products, Greeley, CO

**Procedure**

1. Pour one pint (473 ml) of the liquid fertilizer into each of the quart containers.
2. Add adjuvant(s) to one or more of the containers and mix; follow label directions of adjuvant.
3. Add the Willowood Ethofumesate 4SC and tank mix components to the containers (see rate table below).
4. Close the containers with lids or stoppers and mix contents by inverting the containers ten times.
5. Inspect the surface and body of mixture:
  - a. immediately after mixing
  - b. after allowing mixtures to stand quietly for 30 minutes,
  - c. immediately after mixing again (invert the containers ten more times).

If uniform mixture does not occur, the spray tank mixture should not be used. If any of the mixtures remain uniform for 30 minutes, that mixture may be used in spray tank applications. Should any of the mixtures separate after 30 minutes but remix readily into a uniform mixture with inversion of the container, the mixture may be used provided that adequate agitation is maintained in the spray tank. If a Willowood Ethofumesate 4SC plus fertilizer mixture utilizing an adjuvant is satisfactory, but the one without adjuvant is not, be sure to use the adjuvant in the spray tank at the rate specified on the label which was used in the test.

If non-dispersible oil, sludge, or clumps of solids form in the mixtures, those combinations should not be used for spray tank application.

**Rate Table for Willowood Ethofumesate 4SC Mixtures with Liquid Fertilizers**

Gal. of Liquid Fertilizer to be applied per acre	ml or tsp of Willowood Ethofumesate 4SC to be added to 1 pint of fertilizer	
	gal	tsp.
20	17.6	3.6
30	12.0	2.4
40	9.0	1.9
50	7.1	1.5
60	6.0	1.2

\* Based on field rate of 3.0 lb. ai/acre (3/4 gal/acre) in the fertilizer volumes indicated. Adjust amount of Willowood Ethofumesate 4SC added proportionately to correspond with intended field use rate listed on Willowood Ethofumesate 4SC label (taking into account soil type when using on sugar beets). Add the proportionate amount of tank mix component (e.g., chloridazon) if intended for use, based on volume of Willowood Ethofumesate 4SC used in the test.

## STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

**PESTICIDE STORAGE:** Protect product from freezing temperatures.

**PESTICIDE DISPOSAL:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER HANDLING:** Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying.

(Nonrefillable container ≤ 5 gallons): Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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Lot No. see container