



EPA Reg. No. 279-3455

EPA Est. 279-IL-1

Active Ingredient:	By Wt.(1)
Fluthiacet methyl.....	1.20%
Fomesafen.....	30.08%
Other Ingredients:.....	68.72%
<b>TOTAL:</b>	<b>100.0%</b>

Contains a total of 3.0 lb/gal which include 0.117 lb ai Fluthiacet methyl and 2.883 lb ai Fomesafen per gallon.

## KEEP OUT OF REACH OF CHILDREN WARNING/AVISO

Si usted no entiende esta etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

### FIRST AID (2)

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If Swallowed:** Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

**If on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

**If Inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

### HOTLINE NUMBER (3)

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact FMC Corporation at 1-800-331-3148 for emergency medical treatment information.

**Note to Physician:** MARVEL HERBICIDE contains petroleum distillate. Probable mucosal damage may contraindicate the use of gastric lavage. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.



FMC Corporation  
2929 Walnut Street  
Philadelphia PA 19104

**Net Contents: 2.5 Gallons**

**GROUP**

**14**

**Herbicide**

### ATTENTION

-Although this label may appear similar to the label on a product you may have used, there may be important label differences. Users must read, understand and strictly follow all label directions, precautions and restrictions.

-It is the user's responsibility to be sure the product is approved for sale or use on the intended crop and for use in the specific geographic area.

-It is the user's responsibility to be aware of and to follow all State or local precautions or restrictions not appearing on this product label.

-Prior to purchase or use of this product, read the Terms of Sale or Use and Limitation of Warranty and Liability. If the terms and conditions are unacceptable, return the product immediately in the original and unopened container.

### Table of Contents

Active Ingredient (1).....	1
First Aid (2).....	1
Hotline Number (3).....	1
Precautionary Statements (4).....	1
Directions for Use.....	1
Agricultural Use Requirements (5).....	2
Storage and Disposal (6).....	2
Conditions of Sale and Limitation of Warranty and Liability (7).....	2
Product Information (8).....	3
Application Information (9).....	4
Spray Drift Precautions (10).....	5
Resistance Management (11).....	5
Crop Rotational Restrictions (12).....	6
Replanting Instructions (13).....	6
Spray Equipment Clean-Out (14).....	6
Weeds Controlled (15).....	6
Soybean (16).....	6
Label Tracking Information (17).....	7

### PRECAUTIONARY STATEMENTS (4)

#### Hazards to Humans and Domestic Animals Warning

Causes substantial, but temporary eye injury. Do not get in eyes or on clothing. Wear protective eyewear. Harmful if swallowed. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals.

#### Directions for Use

##### Misuse Statement

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your State or Tribe, consult the Agency responsible for pesticide regulation.

##### Personal Protective Equipment (PPE)

Applicators and other handlers must wear: Coveralls worn over short-sleeved shirt and short pants, protective eyewear (goggles or face shield), chemical-resistant gloves (such as barrier laminate, butyl rubber  $\geq 14$  mils, or viton  $\geq 14$  mils), and footwear plus socks. When mixing and loading wear a chemical-resistant apron.

Mixers and loaders handling more than 100 gallons of this product in a single workday must wear a dust/mist filtering NOISH-approved respirator with an N, R, P, or HE filter.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

##### Engineering Control Statements:

Pilots must use cockpits in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)].

##### IMPORTANT:

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

##### Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a man-

ner 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. Mixers and loaders supporting aerial applications are required to use closed systems. The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)]. When using the closed system, the mixers' and loaders' PPE requirements may be reduced or modified as specified in the WPS

### User Safety Recommendations:

#### Users should:

- Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing 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

MARVEL HERBICIDE is very toxic to algae and moderately toxic to fish. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the high water mark. Do not contaminate water when disposing of equipment wash waters or rinsate.

**Groundwater advisory:** The active ingredients in this product are known to leach through soil into groundwater under certain conditions as a result of agricultural use. Use of this product in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

**Surface Water Advisory:** This product may impact surface water quality due to spray drift and runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having high potential for reaching surface water via runoff for several months after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of MARVEL herbicide from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. See the manual for "Conservation Buffers to Reduce Pesticide Losses" at the following internet address:

<http://www.wsi.nrcs.usda.gov/productsIW2Q/pest/core4.html>.

## AGRICULTURAL USE REQUIREMENTS (5)

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. These requirements 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 24 hours.**

**Exception:** if the product is 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.

Personal Protective Equipment (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 over short-sleeve shirt and short pants, protective eyewear (goggles, face shield or safety glasses), chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride and chemical-resistant footwear plus sock.

## STORAGE AND DISPOSAL (6)

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

### Pesticide Storage

Store product in original container only. Do not contaminate water, food, or feed by storage or disposal. Store in a cool dry place and avoid excess heat. Do not store below 32F degrees.

### In Case of Spill

Avoid contact. Isolate areas and keep out animals and unprotected persons. **Call CHEMTREC (Transportation and spills): (800) 424-9300.**

### To Confine Spills.

Dike surrounding area, sweep up spillage. Dispose of in accordance with information given under Pesticide Disposal. Wash spill area with water, absorb with sand, cat litter or commercial clay, sweep up and dispose of in an approved manner. Place damaged container in a large holding container. Identify contents per required hazardous waste labeling regulations.

### Pesticide Disposal

Pesticide wastes are toxic. 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 of the nearest EPA Regional Office for guidance.

### Container Disposal

**Metal or Plastic Containers - Nonrefillable container.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: **For containers greater than 5 gallons:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available, or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

**For containers 5 gallons or less:** 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 reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Do not cut or weld metal containers.

**Refillable Container -** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

## CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY (7)

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions beyond the control of FMC or Seller. To the extent consistent with applicable law, all such risks shall be assumed by Buyer and User, and, to the extent consistent with applicable law, Buyer and User agree to hold FMC and Seller harmless for any claims relating to such factors.

**Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the Directions for Use when used in accordance with the directions under normal conditions of use. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, FMC MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, NOR ANY OTHER EXPRESS OR IMPLIED WARRANTIES WITH RESPECT TO THE SELECTION, PURCHASE, OR**

**USE OF THIS PRODUCT.** Any warranties, express or implied, having been made are inapplicable if this product has been used contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to (or beyond the control of) seller or FMC, and, to the extent consistent with applicable law, buyer assumes the risk of any such use.

To the extent consistent with applicable law, FMC or seller must not be liable for any incidental, consequential or special damages resulting from the use or handling of this product. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF FMC AND SELLER FOR ANY AND ALL CLAIMS. LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF FMC OR SELLER, THE REPLACEMENT OF THE PRODUCT.

This Conditions of Sale and Limitation of Warranty and Liability may not be amended by any oral or written agreement.

## PRODUCT INFORMATION (8)

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

### Environmental and Agronomic Conditions

Always apply MARVEL Herbicide under favorable environmental conditions that promote active weed growth. Avoid applying MARVEL Herbicide to weeds or labeled crops which are under stress from drought, extreme temperatures, excessive water, low humidity, low soil fertility, mechanical or chemical injury as reduced weed control and/or increased crop injury may result.

### Rainfastness

MARVEL Herbicide requires a 1 hour rain-free period for best results when applied postemergence.

### Cultivation

Cultivation immediately prior to postemergence application is not recommended. Cultivation may put weeds under stress, reducing weed control. Timely cultivation 1-3 weeks after applying MARVEL Herbicide may assist weed control.

### ADJUVANTS REQUIREMENT:

An adjuvant or a product containing an adjuvant is required with MARVEL Herbicide for maximum consistent performance. See Mixing and Loading Instructions Section for further details information. Only spray additives cleared for use on growing crops under 40 CFR 180.1001 may be used in spray mixture.

#### 1. Adjuvants for MARVEL Herbicide Alone

Use either non-ionic surfactant (NIS) 0.25 – 0.5% by volume, crop oil concentrate (COC) 0.5 - 1% by volume, methylated seed oil (MSO) 0.5 - 1% by volume, or an equivalent blended adjuvant. COC or MSO are recommended under dry conditions and low relative humidity for crop use and for all burndown applications.

In addition to an adjuvant, urea ammonium nitrate (UAN) at 1-2 qts./A or spray grade ammonium sulfate (AMS) at recommended use rates may also be added to the spray solution.

Do not use liquid fertilizer as the total carrier solution except for preplant burndown applications.

#### 2. Adjuvants for MARVEL Herbicide in Tank Mixtures with Other Herbicides

When tank mixing with other herbicides, use the adjuvant recommended for use with the tank mix partner. Follow all restrictions and precautions on the tank mix partner's label.

See Specific Crop section for additional use information on adjuvants.

### MIXING AND LOADING INSTRUCTIONS:

This product may not be mixed or loaded within 50 feet of any wells (including abandoned wells and drainage wells), sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs. This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pad or properly diked mixing/loading areas.

Operations that involve mixing, loading rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or wash water, and rainwater that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as

described above shall be maintained at all times. The above specific minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.

This product must be used in a manner which will prevent back siphoning into wells, spills or improper disposal of excess pesticide, spray mixtures or rinsates.

1. The spray equipment must be clean before using this product. If it is contaminated with other materials, mixing problems and/or clogging may occur or crop injury may occur.

2. Prepare no more spray mixture than is needed for the immediate application, and do not let the spray mixture stand in the spray tank overnight.

3. Maintain maximum agitation throughout the spraying operation.

4. Flush the spray equipment thoroughly after each use and apply rinse to an appropriate area.

#### Mixing MARVEL Herbicide Alone

1. Add 1/4 -1/2 of the required amount of clean water to the spray or mixing tank.

2. With the agitator running, add the required amount of MARVEL Herbicide to the spray tank. Continue agitation in the spray tank and allow product to fully and uniformly disperse.

3. Add the spray adjuvant and continue agitation while adding the rest of the water.

4. Maintain agitation until all of the mixture has been applied.

#### Mixing MARVEL Herbicide in Tank Mixtures with Other Pesticides

MARVEL Herbicide is compatible with most commonly used herbicides, insecticides, fungicides, and spray adjuvants. Follow WALE (Wettable/dry, Agitate, Liquids, and Emulsifiable Concentrates) mixing guidelines. BEFORE MIXING MARVEL Herbicide WITH OTHER REGISTERED PRODUCTS FOR ANY USE ON THIS LABEL, READ THE LABEL OF THE TANK MIX PARTNER TO BE CERTAIN IT IS LABELED FOR THE USE ON THE TARGET CROP AND THAT USE PATTERNS ARE COMPATIBLE WITH THOSE OF MARVEL Herbicide. When using MARVEL Herbicide in a tank mixture with other pesticides, observe the most restrictive label limitations and precautions for the products being used.

#### Tank Mixing Steps

1. Add 1/4 -1/2 of the required amount of clean water to the spray or mixing tank.

2. While maintaining agitation, continue filling the spray tank. When the tank is 3/4 full, add any dry formulation tank mix partners and allow them to completely and uniformly disperse.

3. Add the required amount of MARVEL Herbicide to the spray tank while maintaining agitation. After the product has completely and uniformly dispersed into the tank mix, add any other liquid tank mix partners and allow them to completely and uniformly disperse.

4. Add the proper amount of spray adjuvant and continue agitation while adding the remaining water.

5. Complete filling the tank with clean water and maintain sufficient agitation at all times to insure surface action until the mixture is uniform.

6. After use, thoroughly clean the sprayer according to this label (see Cleaning Spray Equipment) and any tank mix partner labels.

#### Compatibility Test

A jar test is recommended before mixing to ensure MARVEL herbicide compatibility with tank mix partners and adjuvants. The following test assumes a spray volume of 25 gallons per acre. For other spray volumes, make appropriate changes in the ingredient rates.

1. Add 1.0 pt. of water to each of 2 one-quart jars.

Note: Use the same source of water and the other components in the compatibility test that will actually be tank mixed and applied. It is important that all components are mixed at a temperature similar to the temperature of those used for the actual application.

2. To one of the jars, add 1/4 tsp. or 1.2 milliliters of a compatibility agent approved for this use (1/4 tsp. is equivalent to 2 pt/100 gallons spray). Shake or stir gently to mix.

3. To both jars, add the appropriate amount of herbicide(s). If more than one herbicide is used, add them separately with dry herbicides first, flowables next, and emulsifiable concentrates last. Finally, add the appropriate amount of any adjuvants that will be used. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of herbicides for this test follows:

**Dry Herbicides and Adjuvants:** For each pound to be applied per acre, add 1.4 tsp. to each jar.

**Liquid Herbicides and Adjuvants:** For each pint to be applied per acre, add 0.5 tsp. or 2.5 milliliters to each jar.

4. After adding all ingredients, put lids on and tighten, and invert each jar 10 times to mix. Let the mixtures stand 15-30 minutes and look for separation, large flakes, precipitates, gels, heavy oil film on the jar, or other signs of incompatibility. Determine if a compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture separates, but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the fol-



lowing methods of improving compatibility.

- a. Slurry the dry pesticide(s) in water before addition, or
- b. Add 1/2 the compatibility agent to the water and the other 1/2 to the emulsifiable concentrate or flowable pesticide before addition to the mixture. If incompatibility is still observed, do not use the mixture.

After compatibility testing is complete, dispose of any pesticide wastes according to the Storage and Disposal section of this label.

## APPLICATION INFORMATION (9)

Utilize a sprayer equipped with the appropriate nozzles providing optimum spray distribution and coverage at the appropriate operating pressures. Utilize nozzles that produce minimal amounts of fine spray droplets to avoid spray drift. Apply a minimum of 10 gallons of finished spray solution per acre by ground or 5 gallons by air. If a dense crop and or weed canopy is present use a minimum of 20 gallons per acre of finished spray volume by ground application. For best results apply MARVEL Herbicide with medium spray droplets. The sprayer should be properly calibrated to deliver the appropriate volume of herbicide solution. Be aware that overlaps and slower ground speeds while starting, stopping or turning while spraying may result in excessive application and subsequent crop response. Mix the amount which will be used for spraying on that day.

### RESTRICTIONS:

Do not apply MARVEL Herbicide when crop foliage is wet due to heavy dew, rain, or irrigation moisture.

Do not apply if crop is under severe stress due to drought, cold weather, hail, flooding, water-logged or compacted soil, disease, insect damage, nutrient deficiency (especially low nitrogen levels), or other causes.

Application to weeds that are under severe stress due to drought or to weeds that are taller than the optimum heights listed in Table 1 may result in reduced weed control.

Do not tank mix with Organo Phosphate (OP) insecticides.

Do not apply when sustained winds exceed 10 mph.

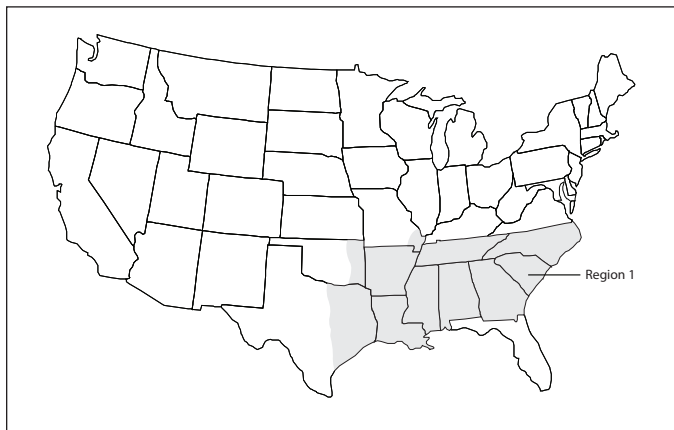
Do not use flood type or other spray nozzles, which deliver coarse, large droplet sprays.

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

Do not make ground or aerial application during temperature inversions.

Not for use in Miami Dade county, FL.

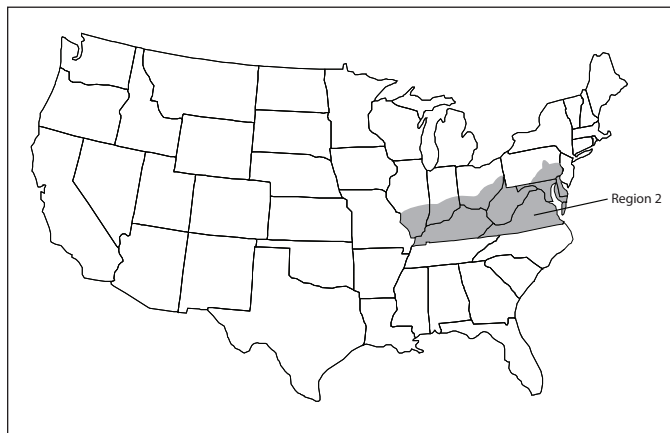
## Region 1



A maximum of 9.75 fl oz of MARVEL Herbicide per season (maximum of 0.375 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre per year in **Region 1**.

**(REGION 1 -** Includes the following states or portion of states where MARVEL Herbicide may be applied: Alabama, Arkansas, Georgia, Louisiana, Mississippi, Missouri (counties of Bollinger, Butler, Cape Girardeau, Dunklin, Madison, Mississippi, New Madrid, Pemiscot, Perry, Ripley, Scott, Stoddard and Wayne), North Carolina, Oklahoma (East of U.S. Highway 75 and East of Indian Nation Parkway), South Carolina, Tennessee, and Texas (includes area East of U.S. Highway 77 to State Road 239 including all of Calhoun County).

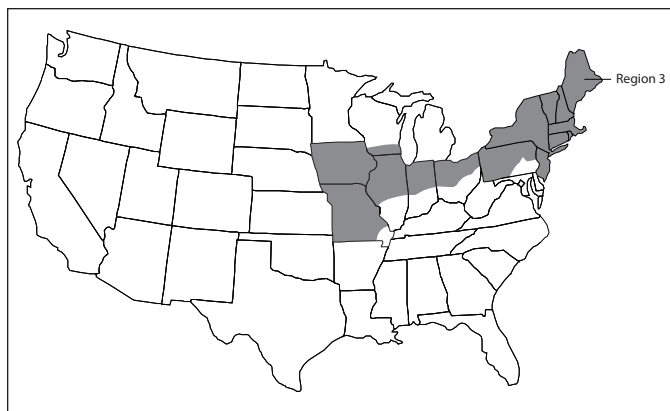
## Region 2



A maximum of 9.75 fl oz of MARVEL Herbicide per season (maximum of 0.375 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in **ALTERNATE** years in **Region 2**.

**(REGION 2 -** Includes the following states or portion of states where MARVEL Herbicide may be applied: Delaware, Kentucky, Maryland, Virginia, West Virginia, South of Interstate 70 in the following states: Illinois, Indiana and Ohio and all areas South of Interstate 80 to the intersection of U.S. Highway 15 and East of U.S. Highway 15 and U.S. Highway 522 in Pennsylvania).

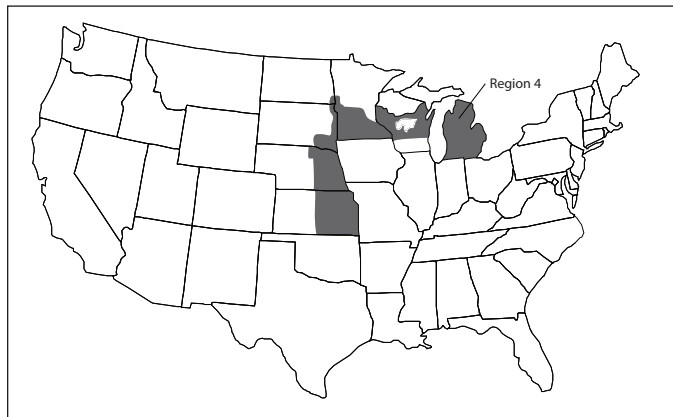
## Region 3



A maximum of 9.75 fl oz of MARVEL Herbicide per season (maximum of 0.313 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in **ALTERNATE** years in **Region 3**.

**(REGION 3 -** Includes the following states or portion of states where MARVEL Herbicide may be applied: Connecticut, Iowa, Maine, Massachusetts, Missouri (all counties except for those listed in Region 1), New Hampshire, New Jersey, New York, Pennsylvania (all areas except those listed in Region 2), Rhode Island, Vermont and Wisconsin (South of U.S. Highway 18 between Prairie Du Chien and Madison, and South of Interstate 94 between Madison and Milwaukee), and North of Interstate 70 in following states: Indiana, Illinois and Ohio).

## Region 4



A maximum of 9.75 fl oz of MARVEL Herbicide per season (maximum of 0.25 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in ALTERNATE years in **Region 4**.

**(REGION 4 -** Includes the following states or portion of states where MARVEL Herbicide may be applied: Kansas (all counties East of or intersected by U.S. Highway 281), Michigan (Southern Peninsula), Minnesota (all areas South of Interstate 94), Nebraska (all counties East of or intersected by U.S. Highway 281), and Wisconsin (all areas, except those in Region 3, South of Interstate 94 from Minnesota state line to Eau Claire and South of U.S. Highway 29 from Eau Claire to Green Bay plus Barron, Chippewa, Clark, Door, Dunn, Eau Claire, Kewaunee, Marathon, Menominee, Oconto, Polk, Shawano, and St. Croix counties. The following counties are excluded: Adams, Marquette, Portage, Waupaca, Waushara and Wood). North Dakota (all areas East of Interstate 29 from Fargo South to the South Dakota state line). South Dakota (all areas East of Interstate 29 from the North Dakota state line to Watertown, all areas East of Highway 81 from Watertown to Madison and all areas East and South of State Road 34 and U.S. Highway 281 to the Nebraska state line).

## Region 5



A maximum of 8.25 fl oz of MARVEL Herbicide per season (maximum of 0.1875 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in ALTERNATE years in **Region 5**.

**(REGION 5 -** Includes the following states or portion of states where MARVEL Herbicide may be applied: North Dakota (all areas East of U.S. Highway 281 except those areas in Region 4), South Dakota (all areas East of U.S. Highway 281 except those areas in Region 4) and Minnesota (all areas South of U.S. Highway 2 except those areas in Region 4).

## SPRAY DRIFT PRECAUTIONS (10)

### AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR AND THE GROWER

The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target movement from applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications of dry materials.

Where states have more stringent regulations, they must be observed.

### Information on Droplet size:

The most effective way to reduce drift potential is to apply large droplets. The optimum drift management strategy is to apply the largest

droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift when applications are made improperly, or under unfavorable environmental conditions (See Wind, Temperature and Humidity, and Temperature Inversions).

### Controlling Spray Droplet Size

**VMD -** VMD is the expression of the droplet size of the spray cloud. The VMD value means that 50% of the droplets are larger than the expressed value and 50% of the droplets are smaller than the expressed value. Optimum MARVEL Herbicide sprays should be 450 microns with fewer than 10% of the droplets being 200 microns or less.

**Volume -** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows usually produce larger droplets.

**Pressure -** Do not use pressures greater than that specified by the nozzle manufacturer. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

**Number of Nozzles -** Use the minimum number of nozzles that provide uniform coverage.

**Nozzle Orientation -** For aerial application, orient nozzles so that the spray is released parallel to the airstream. A parallel orientation results in larger droplets than other orientations and reduces air turbulence and the production of small droplets. Significant deflection from horizontal will reduce droplet size and increase drift potential.

**Nozzle Type -** Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low drift nozzles. For aerial applications, solid stream nozzles oriented straight back produce the largest droplets and potentially the least drift.

**Boom Length -** For some aerial use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

**Application Height -** Making applications at the lowest height that is safe reduces exposure of spray droplets to evaporation and wind movement. Aerial applications should not be made at a height greater than 10 feet above the top of the target plants unless a greater height is required for aircraft safety.

**Swath Adjustment -** Swath adjustment distance must increase, with increasing drift potential (higher wind, smaller drops, etc.).

**Wind -** Drift potential is lowest between winds speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. Do not apply MARVEL herbicide when sustained wind speed exceeds 10 mph. NOTE: Local terrain can influence wind patterns. Every applicator shall be familiar with local wind patterns and how they affect spray drift.

**Temperature and Humidity -** When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

**Temperature Inversions -** Do not apply MARVEL Herbicide during a temperature inversion because the drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the following morning. Their presence can be indicated by ground fog. However, if fog is not present, inversions can also be identified 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.

**Sensitive Areas -** MARVEL Herbicide shall only be applied when the wind is blowing away from adjacent sensitive areas (e.g. residential areas, bodies of water, known habitats for threatened or endangered species and non-target crops)

## RESISTANCE MANAGEMENT (11)

Some weeds are known to develop resistance to herbicides that have been used repeatedly. While the development of resistance is well understood, it is not easily predicted. Therefore herbicides should be used in conjunction with resistance management strategies in the area. Consult the local or State agricultural advisors for details. If weed resistance should develop in the area, this product used alone may not continue to provide sufficient levels of weed control. If the reduced levels of control cannot be attributed to improper application timing, unfavorable weather conditions or abnormally high weed pressure, a resistant strain may have developed. To reduce the potential for weed resistance, use this product in a rotation program with other classes of chemistry and modes of action. Always apply this product at the recommended rates and in accordance with the use directions. For optimum performance, scout fields carefully and begin applications when weeds are smaller rather than larger.

## CROP ROTATIONAL RESTRICTIONS (12)

The following rotational crops may be planted after applying MARVEL Herbicide at recommended rates:

### Minimum Rotation Interval

Crop to be planted	After last MARVEL Herbicide application
Cotton, soybeans, Dry beans, potatoes, snap beans	0
Small grains such as wheat, barley, rye, Peppers (transplanted), tomatoes (transplanted)	4 months
Corn* (field, seed and pop), peanuts, peas, rice	10 months
To avoid crop injury do not plant alfalfa, sunflowers, sugar beets, sorghum** or any other crop within	18 months

Do not graze rotated small grain crops or harvest forage or straw for livestock.

\* Use a 12 month minimum rotation interval for popcorn in the states of Ohio, Kentucky, Illinois, Indiana, Iowa, and Region 4 when applied at rates of 0.25 lb a.i. of fomesafen per acre or more.

\* Use 18 month minimum rotation interval for sweet corn in the states of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont and Region 5.

\*\*Sorghum may be planted back after 10 months in Region 1.

## REPLANTING INSTRUCTIONS (13)

If replanting is necessary in fields previously treated with MARVEL Herbicide, the field may be replanted to cotton or soybeans if the total amount of MARVEL Herbicide per twelve month cropping year has not been exceeded. During replanting, a minimum of tillage is recommended to preserve the herbicide barrier for effective weed control. Do not apply a second application of MARVEL Herbicide or other fomesafen containing product as crop injury or illegal residues may occur in harvested crops. If tank-mix combinations were used, refer to product labels for any additional replanting instructions.

## SPRAYER EQUIPMENT CLEAN-OUT (14)

Many pesticides are very active at low rates, especially to sensitive crops. Residues left in mixing equipment, spray tanks, hoses, spray booms and nozzles can cause crop effects if they are not properly cleaned. As soon as possible after spraying MARVEL herbicide and before using the sprayer equipment for any other applications, the sprayer equipment must be thoroughly cleaned using the following procedure. In addition, users must take appropriate steps to ensure proper equipment clean-out for any other products mixed with MARVEL Herbicide as required on the other product labels. More complete cleaning can be achieved if the spray system is cleaned immediately following the application.

1. Drain sprayer tank, hoses, spray boom and spray nozzles. Use a high-pressure detergent wash to remove physical sediment and residues from the inside of the sprayer tank and thoroughly rinse. Then, thoroughly flush sprayer hoses, spray boom and spray nozzles with a clean water rinse. Remove and clean spray tips and all filters and screens (tank, spray hose and spray tips) separately in the ammonia solution of Step 2.

2. Next, prepare a sprayer cleaning solution by adding three gallons of ammonia (containing at least 3% active) per 100 gallons of clean water. Prepare sufficient cleaning solution to allow the operation of the spray system for a minimum of 15 minutes to thoroughly flush hoses, spray boom and spray nozzles.

3. Convenient and thorough cleaning of the sprayer can be achieved if the ammonia solution or fresh water is left in the spray tank, hoses, spray booms and spray nozzles overnight or during storage.

4. Before using the sprayer, completely drain the sprayer system. Rinse the tank with clean water and flush through the hoses, spray boom, and spray nozzles with clean water. Remove and clean spray tips and all filters and screens (tank, spray hose and spray tip) separately in an ammonia solution.

5. Properly dispose of all cleaning solution and rinsate in accordance with Federal, State, and local regulations and guidelines.

Do not apply sprayer cleaning solutions or rinsate to sensitive crops.

If the sprayer sets overnight or for any extended period of time with MARVEL herbicide spray solution, the spray tank needs to be agitated and purge the spray boom and nozzles before beginning any application.

Should small quantities of MARVEL Herbicide remain in inadequately cleaned mixing, loading and/or spray equipment, they may be released during subsequent applications potentially causing effects to certain crops and other vegetation. FMC accepts no liability for any effects due to inadequately cleaned equipment.

When MARVEL herbicide has been tank mixed refer to the label of the product used previously or tank mixed with MARVEL Herbicide for cleaning instructions.

Do not drain of flush equipment on or near desirable trees or plants.

Do not contaminate any body of water including irrigation water that may be used on other crops.

## WEEDS CONTROLLED (15)

### MARVEL Herbicide Application Alone

At the rates and weed size listed, MARVEL Herbicide controls or suppresses the weeds listed in Table 1 when the product is applied alone. Weeds larger than the size indicated in Table 1 may only be partially controlled.

**Table 1: Weeds controlled or partially controlled by postemergence activity of MARVEL herbicide.**

Weed	Maximum growth stage Weed height (Inches)	
	MARVEL at 5.0 to <7.25 fl oz	MARVEL at 7.25 fl oz
Anoda, Spurred	2	4
Burcucumber	PC	3
Carpetweed	4" diameter	6" diameter size
Citron (Wild Watermelon)	PC	2
Cocklebur, Common	PC	PC
Copperleaf, Hophornbeam	PC	2
Copperleaf, Virginia	PC	2
Crotalaria, Showy	2	4
Croton, Tropic	PC	2
Cucumber, Volunteer	2	4
Dayflower, spreading	2	4
Eclipta	PC	2
Groundcherry, Cutleaf	2	4
Jimsonweed	2	4
Kochia	PC	PC
Ladysthumb	PC	2
Lambsquarters, Common	3	4
Morningglory		
Cypress vine	2	3
Entireleaf var.	2	3
Ivyleaf	2	3
Purple Moonflower	2	3
Red (Scarlet)	2	3
Smallflower	2	3
Pitted (Smallwhite)	2	3
Tall (Common)	2	3
Palm leaf (Willow leaf)	2	3
Mustard, tansy	2	4
Nightshade, Black and Eastern black	2	4
Pigweed		
Amaranth, Palmer	PC	3
Amaranth, Spiny	2	3
Redroot	2	4
Smooth	2	4
Poensettia, wild	PC	2
Purslane, Common	Multileaf 4" diameter	Multileaf 6" diameter
Pusley, Florida	PC	2
Ragweed, Common	PC	3
Ragweed, Giant <sup>a</sup>	PC	PC
Russian thistle <sup>a</sup>	PC	PC
Sesbania, Hemp	2	3
Sida, prickly	PC	PC
Smartweed, Pennsylvania	2	4
Starbur, Bristly	PC	2
Velvetleaf	24	36
Venice Mallow	3	4
Witchweed	Multileaf up to 4"	Multileaf Up to 6"
Waterhemp, Common	2	4
Waterhemp, Tall	2	4
Wild buckwheat	PC	PC
Yellow Rocket	2	4

PC: Partial control means significant activity but not always at a level considered acceptable for commercial weed control

aFor effective control of this weed it is necessary to use 1% MSO and 2.5% UAN v/v as an adjuvant in Regions 2 and 3 (soybeans only)

Some weeds have shown PPO resistance in different geographies. Utilize a different herbicide mode of action for their control.

## SOYBEAN (16)

### Preplant Burndown Application:

Apply MARVEL Herbicide at 5 – 7.25 oz/A (0.117 to 0.17 lb a.i./A) with other registered burndown herbicides or preemergence herbicides in water or liquid fertilizers as a burn-down treatment to control or suppress weeds prior to planting of labeled crops (for in crop applications see crop sections). MARVEL herbicide must be tank mixed with the appropriate burndown herbicide such as glyphosate, glufosinate, paraquat, 2,4-D, etc. for maximum burndown control. MARVEL Herbicide improves control, speed and desiccation of weeds when used as part of a burndown tankmix. MARVEL herbicide is a contact herbicide therefore thorough coverage is essential for adequate control. For

optimum performance make applications to actively growing weeds. Always use the most restrictive label language when applied in a tank mix.

**Postemergence Application:**

When applied alone apply MARVEL Herbicide at 5 - 7.25 fl oz/A applied from preplant through the full flowering stage of development (prior to R3 stage). The spray boom should be maintained a minimum of 18 inches above the crop canopy to ensure uniform spray delivery. For optimum performance, make application to actively growing weeds up to 2 to 4 inches tall and rosettes less than 3 inches across. Coverage is essential for good control. Refer to Table 1 for weeds controlled at labeled rates of MARVEL Herbicide. Use 10 to 30 gallons per acre of finished spray solution by ground. For optimum weed control use higher gallonage to obtain better spray coverage. Apply a minimum of 5 gallons of finished spray solution by aerial application.

Application after weeds have reached the listed maximum height for control could result in commercially unacceptable weed control. Some bronzing, crinkling or spotting of soybean leaves may occur following postemergence applications, but soybeans soon outgrow these effects and develop normally.

**Tank Mixture Use:**

Apply MARVEL herbicide at 5 to 7.25 fl oz (0.117 to 0.17 lb a.i.) per acre in combination with glyphosate, glufosinate or other registered soybean herbicides for improved postemergence control of many broadleaf weeds such as Velvetleaf, Lambsquarters, Morningglory, Palmer pigweed, Waterhemp and others. For adjuvant use refer to adjuvant use section.

**Adjuvant Requirements:**

Use either non-ionic surfactant (NIS) 0.25 to 0.5% by volume, crop oil concentrate (COC) 0.5 to 1% by volume, methylated seed oil (MSO) 0.5 to 1% by volume, or an equivalent blended adjuvant. COC or MSO are recommended under dry conditions and low relative humidity for in crop use and for all burndown applications. MSO is known to enhance crop response under high relative humidity conditions. In addition to an adjuvant, urea ammonium nitrate (UAN) at 1-2 qts./A or spray grade ammonium sulfate (AMS) at recommended use rates may also be added to the spray solution. Do not use liquid fertilizer as the total carrier solution except for preplant burndown applications.

**Adjuvants for MARVEL Herbicide in Tank Mixtures with Other Herbicides**

When tank mixing with other herbicides, use the adjuvant recommended for use with the tank mix partner. Follow all restrictions and precautions of the most restricted product in the tank mix.

**Restrictions:**

- Do not apply more than 7.25 (0.17 lb a.i./A) per application and a total of 9.75 fl. oz/A (0.23 lb a.i.) of MARVEL Herbicide per cropping season including preplant burndown and post emergent applications.
- Do not apply more than 0.0089lb a.i./A of Fluthiacet methyl per season.
- Do not graze or feed treated soybean forage or hay to livestock.
- Do not harvest within 60 days of the last application of MARVEL herbicide

## **LABEL TRACKING INFORMATION (17)**

Label Code: 05-16-17

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