

S-Metolachlor	GROUP	15	HERBICIDE
Tolpyralate	GROUP	27	HERBICIDE



# EMPYROS™

**A Preemergence and Postemergence Herbicide for Control of Annual Grass and Broadleaf Weeds in Field Corn, Seed Corn, Sweet Corn, and Yellow Popcorn**

**Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited.**

**ACTIVE INGREDIENTS:**

S-Metolachlor ((S)-2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide) ..... 41.45%

Tolpyralate ((RS)-1-(1-Ethyl-4-(4-mesyl-3-(2-methoxyethoxy)-o-toluoyl)pyrazol-5-yloxy)ethyl methyl carbonate) ..... 1.12%

**OTHER INGREDIENTS:** ..... 57.43%

**TOTAL:** ..... 100.00%

Contains petroleum distillates.

Contains S-metolachlor at 3.72 lbs./gal and Tolpyralate at 0.10 lbs./gal.

Contains safener for corn.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

See additional precautionary statements, directions for use, and storage and disposal instructions inside booklet.

EPA Reg. No. 5905-641

EPA EST. NO.: First Letters of Product Batch Code Indicate Producing Establishment:

5905-AR-1=WA • 5905-GA-1=CG • 5905-IA-1=DI • 5905-CA-1=KC

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**Manufactured for  
Helena Agri-Enterprises, LLC  
225 Schilling Boulevard, Suite 300  
Collierville, TN 38017**

<b>FIRST AID</b>	
If swallowed	<ul style="list-style-type: none"> <li>• Immediately call a poison control center or doctor.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give any liquid to the person.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
If in eyes	<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>
If on skin or clothing	<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>
<b>HOTLINE NUMBER</b>	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact (800) 424-9300, for 24-hour medical emergency assistance (human or animal) and chemical emergency assistance (spill, leak, fire, or accident).	
<b>NOTE TO PHYSICIAN</b>	
Contains petroleum distillate. Vomiting may cause aspiration pneumonia.	

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

Harmful if swallowed. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**Personal Protective Equipment (PPE)**

**Mixers, Loaders, Applicators and other handlers must wear:**

- Protective eyewear (safety glasses, goggles)
- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of barrier laminate or Viton® ≥14 mils
- Shoes plus socks

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

<b>User Safety Recommendations</b>
<b>Users should:</b> <ul style="list-style-type: none"> <li>• Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.</li> <li>• 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.</li> </ul>

**Engineering Controls**

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.607(d-e)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**ENVIRONMENTAL HAZARDS**

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate. Do not apply where/when conditions could favor runoff.

### **Ground Water Advisory**

S-metolachlor and Tolpyralate have the potential to leach through soil into ground water 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 ground water contamination.

### **Surface Water Advisory**

This product has the potential to contaminate surface water through ground spray drift and runoff of rain water. This product is classified as having high potential for reaching surface water via runoff for several months or more after application. Conditions that contribute to this potential include poorly drained or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas overlaying extremely shallow groundwater, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas overlaying tile drainage systems that drain to surface water.

A level, well-maintained buffer strip between areas to which this product is applied and surface water features including ponds, streams, and springs will reduce the potential loading of this product from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours.

### **Mixing/Loading/Application Instructions**

Care must be taken when using this product to prevent back siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates. Check valves or antisiphoning devices must be used on mixing equipment. This product may not be mixed/loaded or used within 50 ft. of wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 ft. 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 rain water 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-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site.

### **PHYSICAL AND CHEMICAL HAZARDS**

Do not use or store near heat or open flame. Do not mix or allow to come in contact with oxidizing agents. Hazardous chemical reaction may occur.

### **DIRECTIONS FOR USE**

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

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

### **AGRICULTURAL USE REQUIREMENTS**

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

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

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 and water, wear:

- Protective eyewear (safety glasses, goggles)
- Coveralls
- Chemical-resistant gloves made of barrier laminate or Viton  $\geq 14$  mils
- Shoes and socks

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

**Note:** It is illegal to sell, use or distribute this product within, or into, Nassau County or Suffolk County, New York.

**Empyros™** can be used in yellow popcorn, and sweet corn for preemergence weed control and in field corn and seed corn for preemergence and early postemergence control of many annual grasses and broadleaf weeds. **Empyros™** contains the safener benoxacor (0.19 lb/gal).

See Tables 1 and 2 for a list of weeds controlled. This product must be used prior to weed emergence to effectively control most grass weeds.

Applied according to use directions and under normal growing conditions, **Empyros™** will not harm the treated crop. During germination and early stages of growth, environmental conditions or other factors that favor poor or slow growth can weaken crop seedlings. **Empyros™** used under these conditions can result in crop injury.

**Use Restrictions**

1. Do not apply this product through any type of irrigation system.
2. Do not use flood irrigation to apply or incorporate this product.
3. Do not use aerial application to apply **Empyros™**.
4. Do not contaminate irrigation water used for non-labeled crops or water used for domestic purposes.
5. Do not apply under conditions which favor runoff or wind erosion of soil containing this product to non-target areas.

**Use Precautions**

1. To prevent off-site movement due to runoff or wind erosion:
  - a. Avoid treating powdery, dry, or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
  - b. Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow-covered soils.
  - c. Do not use tail water from the first flood or furrow irrigation of treated fields to treat nontarget crops, unless at least  $\frac{1}{2}$  inch of rainfall has occurred between application and the first irrigation.

**WEED RESISTANCE MANAGEMENT**

For resistance management, **Empyros™** is a combination of S-metolachlor and Tolpyralate (Group 15 and 27 herbicides). Any weed population may contain or develop plants naturally resistant to **Empyros™** and other Group 15 and 27 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Appropriate resistance management strategies should be followed.

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

- Rotate the use of **Empyros™** or other Group 15 and 27 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.
- Identify weeds present in the field through scouting and field history and understand their biology. The weed-control program should consider all of the weeds present.

- Difficult to control weeds may require sequential applications of herbicides with differing mechanisms of action.
- 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.
- Plant into weed-free fields and keep fields as weed-free as possible.
- Prevent an influx of weeds into the field by managing field borders.
- Fields should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective.
- 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 field-to-field and within-field movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields and planting clean seed.
- To the extent possible do not allow weed escapes to produce seeds, roots or tubers. Manage weed seeds at harvest and post-harvest to prevent a buildup of the weed seedbank.
- 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, and/or use non-chemical means to remove escapes, as practical, with the goal of preventing further seed production.
- 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 Helena Agri-Enterprises, LLC representatives at 901-761-0050 or at [www.helenaagri.com](http://www.helenaagri.com).

Apply this herbicide at the correct timing and rate needed to control the most difficult weed in the field.

Use a broad-spectrum soil-applied herbicide with a mechanism of action that differs from this product as a foundation in a weed-control program. Do not use more than two applications of this or any other herbicide with the same mechanism of action within a single growing season unless mixed with an herbicide with another mechanism of action with an overlapping spectrum for the difficult-to-control weeds.

### **Integrated Pest (Weed) Management**

**Empyros™** may be integrated into an overall weed and pest management strategy. Practices known to reduce weed development (tillage, crop competition) and herbicide use (weed scouting, proper application timing, banding and rotations) should be followed wherever possible. Consult local agricultural and weed authorities for additional Integrated Pest Management strategies established for your area.

### **Ground Application**

Spray nozzles should be uniformly spaced, the same size and type, and should provide accurate and uniform application. Use spray nozzles that deliver medium or coarser droplet size (ASABE S572) to provide good coverage and avoid drift. Ensure that all in-line strainer and nozzle screens in the sprayer are 50-mesh or coarser.

Always ensure that agitation is maintained until spraying is completed, even if stopped for brief periods of time. If the agitation is stopped for more than 5 minutes, resuspend the spray solution by running on full agitation prior to spraying.

### Preemergence Applications

Apply **Empyros™** preemergence with a carrier volume of 10-80 gal/A.

### Postemergence Applications

Good weed coverage is essential for optimum weed control. Apply in a spray volume of 10-30 gal/A. When weed foliage is dense, use a minimum spray volume of 20 gal/A. Flat fan nozzles are recommended for optimum postemergence coverage. Do not use floodjet or venturi type nozzles or controlled droplet application equipment for postemergence applications. Use only clean water as the carrier when applying **Empyros™** after crop emergence.

### Aerial Application

Do not use aerial application to apply **Empyros™**.

### Chemigation Application

Do not use chemigation application to apply **Empyros™**.

### MANDATORY SPRAY DRIFT DIRECTIONS

#### Ground Boom 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 coarser droplet size (ASABE S572).
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

#### Boom-less Ground Applications

- Applicators are required to use a medium or coarser droplet size (ASABE S572) for all applications.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

### Spray Drift Advisories

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of equipment and weather-related factors determine the potential for drift. The applicator is responsible for considering these factors when making an application decision.

Do not apply when weather conditions may cause drift to non- target areas. Drift may result in injury to adjacent crops and vegetation. To avoid spray drift, DO NOT apply when the wind speed is greater than 10 mph or during periods of temperature inversions.

Leave a sufficient buffer to avoid drift to sensitive crops. This buffer may be untreated corn rows or field border species maintained for this purpose. The width of the buffer needed for a specific application will depend on the wind speed, distance to sensitive crops, and application equipment parameters.

### Information on Droplet Size

The most effective way to reduce spray drift potential is to apply larger droplets. The best 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 if applications are made improperly, or under unfavorable environmental conditions.

### Controlling Droplet Size

1. Application Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
2. Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher rate nozzles instead of increasing pressure.
3. Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage.

### **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.

### **Sensitive Areas**

**Empyros™** should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, nontarget crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

### **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.

### **Boom-less Ground Applications**

Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

### **Handheld Technology Applications**

Take precautions to minimize spray drift.

### **Applications After Corn Has Emerged**

When applying **Empyros™** postemergence to corn, add either a nonionic surfactant (NIS) or crop oil concentrate (COC). When using a NIS, add at 0.25% v/v (1 qt./100 gal.). When using a COC, add at a rate of 1% v/v (1 gal/100 gal.) or the equivalent of 1 gal/100 gal. The use of COC will provide more consistent weed control than an NIS but may also result in temporary crop injury.

In addition to NIS or COC, a nitrogen-based adjuvant may also be added to increase consistency of weed control. The use of nitrogen-based adjuvants (AMS or UAN) will increase the risk of crop injury and can result in temporary crop injury.

Do not use methylated seed oil (MSO) with **Empyros™** when applied alone to emerged field corn, or when **Empyros™** is applied as a postemergence tank mixture with other products.

### **Applications Prior to Corn Emergence**

Any of the adjuvants may be used at a preemergence or preplant timing, i.e. where the corn crop has not yet emerged, to increase burndown activity on existing weeds.

Either water or liquid fertilizers, excluding suspension fertilizers, may be used as carriers for preemergence applications. If fluid fertilizers are used, a compatibility test must be done. Even if **Empyros™** is physically compatible with a fluid fertilizer, constant agitation is necessary to maintain a uniform mixture during application. Use only clean water as the carrier when applying **Empyros™** after crop emergence.

The spray tank must be clean, thoroughly rinsed, and decontaminated before adding either **Empyros™** alone or with tank-mix partners. If water is used as the carrier, use clean water.

**Empyros™** may be tank mixed with other herbicides registered for weed control in field corn, sweet corn, and popcorn. Read and follow all label directions for each product. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions, limitations, and directions for use on all product labels involved in the tank mixture. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture. Do not tank mix **Empyros™** with any other insecticide, fungicide, fertilizer solution, or adjuvant not recommended on the label without testing compatibility, as poor mixing may result. It is recommended that the compatibility of any tank-mix combination be tested on a small scale such as a jar test before actual tank mixing.

#### **Use the Following Mixing Instructions for Adding Empyros™ to the Spray Tank**

1. Only use sprayers in good operating condition with adequate agitation. Ensure the sprayer is cleaned according to instructions on label of the product used prior to use of **Empyros™**.
2. Begin to fill sprayer tank or premix tank with clean water and engage agitator. Agitation must be continued throughout the entire mixing and spraying procedure.
3. When the sprayer or premix tank is half full of water, begin to add the mixture components.
4. If ammonium sulfate (AMS) is used, continue agitation until completely dispersed.
5. If a wettable powder or dry flowable formulation is used, add it slowly to the tank. Mixing and compatibility may be improved when a wettable powder or dry flowable is diluted with water before adding to the tank. Agitate during the procedure.
6. If a flowable formulation is used, add slowly to the tank.
7. Add **Empyros™** slowly to the tank.
8. Add any other liquid tank-mix products next with emulsifiable concentrates last.
9. Add an adjuvant last, if needed.
10. Complete filling the sprayer tank and continue agitation.
11. Apply as soon as possible after spray mixture is prepared. Do not leave mixture in spray tank overnight without agitation.

If **Empyros™** is added to the spray tank via induction, compatibility may be compromised. If an induction tank (or similar equipment) is used, add each product separately and allow each to disperse into the spray tank before adding the next product. For best tank-mix compatibility, rinse the induction tank with water before adding each component.

It is recommended that **Empyros™** not be added to the spray tank via in-line injection.

#### **Compatibility Test**

A compatibility test is recommended before tank mixing to ensure compatibility of **Empyros™** with fertilizer carriers or other pesticides. The following test assumes a spray volume of 25 gal/A. For other spray volumes, make appropriate changes in the ingredients.

Nitrogen solutions or complete liquid fertilizers, excluding suspension fertilizers, may replace all or part of the water in the spray. Because liquid fertilizers vary, even within the same analysis, always check compatibility with pesticide(s) before use. Incompatibility of tank mixtures is more common with mixtures of fertilizer and pesticides.

#### **Compatibility Test Procedure**

1. Add 1.0 pt. of carrier (fertilizer or water) to each of two 1 qt jars with tight lids. Use the same source of water that will be used for the tank mix and conduct the test at the temperature the tank mix will be applied.
2. To one of the jars, add ¼ tsp. or 1.2 milliliters of a compatibility agent approved for this use (¼ tsp. is equivalent to 2.0 pt./100 gal spray). Shake or stir gently to mix.
3. To both jars, add the appropriate amount of pesticide(s) in their relative proportions based on label rates. If more than one pesticide is used, add them separately as described in the Mixing Procedures section of this label. After each addition, shake or stir gently to thoroughly mix.
4. After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15-30 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility.
5. Determine if the 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 following methods of improving compatibility: (a) slurry the dry pesticide(s) in water before addition, or (b) add half of the compatibility agent to the fertilizer or water and the other half 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 in accordance with the Storage and Disposal section in this label.

### Cleaning Equipment After Application

Special attention must be given to cleaning equipment before spraying a crop other than field corn. Mix only as much spray solution as needed.

### Equipment Cleaning Procedure

1. Flush tank, hoses, boom, and nozzles with clean water.
2. Prepare a cleaning solution of 1 gal of household ammonia per 25 gal of water. Many commercial spray tank cleaners may be used.
3. Use a pressure washer to clean the inside of the spray tank with this solution. Take care to wash all parts of the tank, including the inside top surface. If a pressure washer is not available, completely fill the sprayer with the cleaning solution to ensure contact of the cleaning solution with all internal surfaces of the tank and plumbing. Start agitation in the sprayer and thoroughly recirculate the cleaning solution for at least 15 minutes. All visible deposits must be removed from the spraying system.
4. Flush hoses, spray lines, and nozzles for at least 1 minute with the cleaning solution.
5. Remove boom end caps and flush dead space areas, with water, then replace caps.
6. Dispose of rinsate from steps 1-5 in an appropriate manner, according to all local State and federal regulations.
7. Repeat steps 2-6.
8. Remove nozzles, screens, and strainers and clean separately in the ammonia solution after completing the above procedures.
9. Rinse the complete spraying system with clean water.

**Empyros™** applied as directed in this label will control or suppress the weeds listed in Tables 1 and 2. Optimum weed control will be obtained if **Empyros™** is applied according to all label directions.

If a significant rainfall does not occur within 7 days after a preemergence application, weed control may be decreased. When weeds are stressed or not actively growing due to drought, heat, lack of fertility, flooding, or prolonged cool temperatures, postemergence control can be reduced or delayed.

**Table 1. Weeds Controlled or Partially Controlled by Preemergence Applications of Empyros™**

Common Name	Scientific Name	C = Control PC = Partial Control
Amaranth, Palmer	<i>Amaranthus palmeri</i>	C
Amaranth, Powell	<i>Amaranthus powellii</i>	C
Barnyardgrass	<i>Echinochloa crus-galli</i>	C
Buffalobur	<i>Solanum rostratum</i>	C
Carpetweed	<i>Mollugo verticillata</i>	C
Cocklebur, common	<i>Xanthium strumarium</i>	PC
Crabgrass, large	<i>Digitaria sanguinalis</i>	C
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	C
Cupgrass, prairie	<i>Eriochloa contracta</i>	C
Cupgrass, Southwestern	<i>Eriochloa acuminata</i>	C
Cupgrass, woolly	<i>Eriochloa villosa</i>	PC
Foxtail, giant	<i>Setaria faberi</i>	C
Foxtail, green	<i>Setaria viridis</i>	C
Foxtail, robust (purple, white)	<i>Setaria viridis</i>	C
Foxtail, yellow	<i>Setaria pumila</i>	C
Galinsoga	<i>Galinsoga parviflora</i>	C
Goosegrass	<i>Eleusine indica</i>	C
Jimsonweed	<i>Datura stramonium</i>	C
Johnsongrass, seedling	<i>Sorghum halepense</i>	PC
Kochia	<i>Kochia scoparia</i>	PC
Lambsquarters, common	<i>Chenopodium album</i>	C

Millet, foxtail	<i>Setaria italica</i>	C
Millet, wild proso	<i>Panicum miliaceum</i>	PC
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	PC
Morningglory, entireleaf	<i>Ipomoea hederacea</i>	PC
Nightshade, black	<i>Solanum nigrum</i>	C
Nightshade, Eastern black	<i>Solanum ptycanthum</i>	C
Nightshade, hairy	<i>Solanum sarachoides</i>	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	C
Panicum, browntop	<i>Panicum fasciculatum</i>	C
Panicum, fall	<i>Panicum dichotomiflorum</i>	C
Panicum, Texas	<i>Panicum texanum</i>	PC
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C
Purslane, common	<i>Portulaca oleracea</i>	C
Pusley, Florida	<i>Richardia scabra</i>	C
Ragweed, common	<i>Ambrosia artemisiifolia</i>	PC
Ragweed, giant	<i>Ambrosia trifida</i>	PC
Rice, red	<i>Oryza sativa</i>	C
Sandbur, field	<i>Cenchrus incertus</i>	PC
Shattercane	<i>Sorghum bicolor</i>	PC
Sida, prickly	<i>Sida spinosa</i>	PC
Signalgrass, broadleaf	<i>Brachiaria platyphylla</i>	PC
Smartweed, ladysthumb	<i>Polygonum persicaria</i>	C
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C
Sprangletop, red	<i>Leptochloa filiformis</i>	C
Velvetleaf	<i>Abutilon theophrasti</i>	C
Waterhemp, common	<i>Amaranthus rudis</i>	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C
Witchgrass	<i>Panicum capillare</i>	C

**Table 2: Weeds Controlled or Partially Controlled by Early Postemergence Applications of Empyros™**

**Empyros™** applied early postemergence will provide control or partial control of small emerged broadleaf weeds (less than 3 inches) but will not provide consistent or effective control of weeds identified as resistant to postemergence HPPD inhibitors.

Common Name	Scientific Name	C = Control PC = Partial Control
Amaranth, Palmer	<i>Amaranthus palmeri</i>	C
Amaranth, Powell	<i>Amaranthus powellii</i>	C
Barnyardgrass	<i>Echinochloa crus-galli</i>	C
Buffalobur	<i>Solanum rostratum</i>	C
Carpetweed	<i>Mollugo verticillata</i>	C
Cocklebur, common	<i>Xanthium strumarium</i>	C
Cupgrass, woolly	<i>Eriochloa villosa</i>	C
Cupgrass, prairie	<i>Eriochloa contracta</i>	C
Cupgrass, Southwestern	<i>Eriochloa acuminata</i>	C
Crabgrass, large	<i>Digitaria sanguinalis</i>	C
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	C
Dandelion	<i>Taraxacum officinale</i>	PC
Foxtail, giant	<i>Setaria faberi</i>	C
Foxtail, green	<i>Setaria viridis</i>	C
Foxtail, yellow	<i>Setaria pumila</i>	C
Foxtail, millet	<i>Setaria italica</i>	C
Galinsoga	<i>Galinsoga parviflora</i>	C
Goosegrass	<i>Eleusine indica</i>	C
Hemp	<i>Cannabis sativa</i>	C

Henbit	<i>Lamium amplexicaule</i>	C
Horsenettle	<i>Solanum carolinense</i>	C
Horseweed (maretail)	<i>Conyza canadensis</i>	C
Jimsonweed	<i>Datura stramonium</i>	C
Kochia	<i>Kochia scoparia</i>	PC
Lambsquarters, common	<i>Chenopodium album</i>	C
Millet, wild proso	<i>Panicum miliaceum</i>	PC
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	PC
Morningglory, tall	<i>Ipomoea purpurea</i>	PC
Mustard, blue	<i>Chorispora tenella</i>	C
Mustard, wild	<i>Brassica kaber</i>	C
Nightshade, black	<i>Solanum nigrum</i>	C
Nightshade, Eastern black	<i>Solanum ptycanthum</i>	C
Nightshade, hairy	<i>Solanum sarachoides</i>	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	PC
Panicum, fall	<i>Panicum dichotomiflorum</i>	C
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C
Pokeweed, Common	<i>Phytolacca americana</i>	C
Potatoes, volunteer	<i>Solanum spp.</i>	C
Purslane, common	<i>Portulaca oleracea</i>	C
Pusley, Florida	<i>Richardia scabra</i>	C
Ragweed, common	<i>Ambrosia artemisiifolia</i>	C
Ragweed, giant	<i>Ambrosia trifida</i>	C
Shattercane/volunteer sorghum	<i>Sorghum bicolor</i>	PC
Sida, prickly	<i>Sida spinosa</i>	PC
Smartweed, ladysthumb	<i>Polygonum persicaria</i>	C
Smartweed, Pennsylvania	<i>Polygonum pensylvanicum</i>	C
Sowthistle, annual	<i>Sonchus oleraceus</i>	C
Sunflower, volunteer	<i>Helianthus annuus</i>	C
Sunflower, wild (common)	<i>Helianthus annuus</i>	C
Thistle, Canada	<i>Cirsium arvense</i>	PC
Velvetleaf	<i>Abutilon theophrasti</i>	C
Waterhemp, common	<i>Amaranthus rudis</i>	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C

When **Empyros™** is applied as directed on this label, follow the crop rotation intervals in Table 3. If **Empyros™** is tank mixed with other products, follow the most restrictive product's crop rotation interval.

**Table 3. Crop Rotational Intervals**

Crop	Rotational Interval <sup>1</sup>
All corn types	Anytime
Barley, oats, rye, wheat	4.5 months
Grain sorghum, <sup>2</sup> cotton, peanuts, potatoes, and soybeans	9 months
All other rotational crops	18 months

<sup>1</sup> Time between **Empyros™** application and replanting of the rotational crop

<sup>2</sup> Grain sorghum must be seed treated with a safener to tolerate S-metolachlor

#### **CORN: Field Corn, Seed Corn, Sweet Corn and Yellow Popcorn**

Apply **Empyros™** for preemergence control of many annual grass and broadleaf weeds in field corn, seed corn, sweet corn and yellow popcorn. **Empyros™** may also be applied early postemergence for the control of broadleaf weeds in field corn and seed corn. Do not apply **Empyros™** to yellow popcorn or sweet corn after the crop has emerged, or crop injury may occur. Refer to Tables 1 and 2 for a list of weeds controlled or partially controlled by **Empyros™**.

## Empyros™ Application Timings

### Burndown for Reduced Tillage Situations

In reduced or no-till corn and before the crop has emerged, **Empyros™** can be applied alone or in tank mixture with paraquat dichloride; diquat dibromide; glyphosate; glyphosate-isopropylammonium; glyphosate, ammonium salt; glycine, N-(phosphonomethyl)-, diammonium salt; glycine, N-(phosphonomethyl)-potassium salt; nonanoic acid; dithiopyr; or other registered herbicides for burndown of existing weeds. Refer to Tables 1 and 2 for specific weeds controlled by **Empyros™**. Read and follow all product labels for specific use directions and information on weeds controlled. Refer to the ADDITIVES and TANK MIX sections on this label for additional recommendations.

### Early Preplant and Preemergence

Apply **Empyros™** early preplant (up to 14 days prior to planting) or preemergence to field corn, seed corn, sweet corn, and yellow popcorn.

### Early Postemergence

Apply **Empyros™** to field or seed corn after emergence until the plants reach 20 inches in height or up to the V6 stage of corn growth. Target applications to corn that is less than 12 inches tall for improved coverage and best overall performance. Use only clean water as the carrier when applying **Empyros™** after crop emergence. Do not apply postemergence in liquid fertilizer or severe crop injury will occur. Do not apply **Empyros™** to emerged yellow popcorn or sweet corn, or severe crop injury may occur. Refer to the ADDITIVES section on this label for burndown adjuvant recommendations.

### Timing to Weeds

Apply **Empyros™** when susceptible weeds are young and actively growing, but before they exceed 3 inches in height. Treat heavy infestations of weeds before they become too competitive with the crop, especially where soil moisture and/or fertility are limited. **Empyros™** provides weed control via foliar and root absorption. For later-emerging weeds, a second application or a timely cultivation is required. Applications made to weeds larger than the size indicated on this label or to weeds under stress may result in unsatisfactory control.

### Empyros™ Use Rates

Apply **Empyros™** at a rate of 1.4 qt/A (1.30 lbs. S-metolachlor/A; 0.035 lb. tolpyralate/A) for control or partial control of the weeds listed in Tables 1 and 2.

**Table 4. Empyros™ Use Rates in Corn**

Empyros™ Use Rate
1.4 qt/A (1.30 lbs. S-metolachlor/A; 0.035 lb. tolpyralate/A)

### Tank-Mix Combinations

#### Preemergence (Applied Before the Crop has Emerged)

Tank-mix partners listed in Table 5 may be used in conventional, reduced, or no-till systems and be applied by the same methods and at the same timings as **Empyros™** unless otherwise specified in the tank-mix product label. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions 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.

**Table 5: Empyros™ Tank Mixtures for Preemergence Applications in Corn**

Tank Mix <sup>1</sup>	Objective
Atrazine solo products	Improved broadleaf and grass weed control
Paraquat dichloride products	Burndown existing weeds
Metribuzin solo products	Improved broadleaf weed control
Simazine products	Improved broadleaf and grass weed control
Glyphosate Brands	Burndown existing weeds
2,4-D	Burndown existing weeds
Warrior II with Zeon Technology® (lambda-cyhalothrin, EPA Reg. No. 100-1295)	To control insects, such as cutworm

<sup>1</sup> Refer to tank-mix product label for use rates.

### Early Postemergence (Applied After the Crop has Emerged)

Tank-mix products listed in Table 6 may be used in conventional, reduced, or no-till systems and be applied by the same methods and at the same timings as **Empyros™** unless otherwise specified in the tank-mix product label. Follow all tank-mix product labels for use rates and restrictions. Perform a compatibility test.

**Table 6: Empyros™ Tank Mixtures for Postemergence Applications in Field Corn**

Tank Mix <sup>1,2</sup>	Objective
Atrazine solo products	Improved broadleaf and annual grass weed control
Accent® Q (nicosulfuron, EPA Reg. No. 352-773)	Emerged grass control
Basis® (thifensulfuron and rimsulfuron, EPA Reg. No. 352-571 and EPA Reg. No. 352-854)	Emerged grass control
Glufosinate products	See instructions under “Empyros Programs in Glufosinate-Resistant Corn” section of this label
NorthStar® (dicamba, sodium salt and primisulfuron-methyl, EPA Reg. No. 100-923)	Improved broadleaf and grass weed control
Peak® (prosulfuron, EPA Reg. No. 100-763)	Improved broadleaf and grass weed control
Resolve® Q (thifensulfuron and rimsulfuron, EPA Reg. No. 352-777)	Emerged grass control
Glyphosate Brands	See instructions under “Empyros Programs in Glyphosate Resistant Corn” section of this label
Spirit® (primisulfuron-methyl and prosulfuron, EPA Reg. No. 100-911)	Improved broadleaf and grass weed control
Status® (diflufenzopyr-sodium and dicamba, sodium salt, EPA Reg. No. 7969-242)	Emerged grass control
Steadfast® Q (nisulfuron and rimsulfuron, EPA Reg. No. 352-774)	Emerged grass control
Sultrus® (beta-cyfluthrin, EPA Reg. No. 5905-599) or Warrior II with Zeon Technology	To control insects, such as cutworm

<sup>1</sup> Refer to tank-mix product label for use rates.

<sup>2</sup> Consult the “Additives” section of this label for recommendations when applying **Empyros™** in tank mixture to emerged field corn.

### Empyros™ Programs in Glyphosate Resistant Corn

**Empyros™** may be applied early postemergence at 1.4 qt/A (1.30 lbs. S-metolachlor/A; 0.035 lb. tolpyralate/A) in tank mixture with a solo glyphosate product (e.g. Touchdown® or Roundup® brands) that is registered for use over-the-top in glyphosate resistant field corn (e.g. Roundup Ready or Agrisure® GT Corn). To minimize weed competition with the crop, target the application of this mixture to weeds in the 1 to 2 inch range. If the glyphosate product has a built-in adjuvant system (i.e. the product label does not ask for additional adjuvant), only spray-grade ammonium sulfate (AMS) at 8.5 lbs./100 gal. should be added to this mixture. If the glyphosate product label calls for an adjuvant in addition to AMS, add a non-ionic surfactant (NIS) at 0.25% v/v and AMS to this spray mixture. Do not add urea ammonium nitrate (UAN), crop oil concentrate (COC), or methylated seed oil (MSO) type adjuvants to these mixtures, or crop injury may occur. Follow all directions for use and restrictions on the glyphosate product label.

Alternatively, **Empyros™** may be applied preemergence at 1.4 qt/A (1.30 lbs. S-metolachlor/A; 0.035 lb. tolpyralate/A) as part of a two-pass weed control system when followed by a postemergence application of a glyphosate-based product in glyphosate resistant corn (e.g. Roundup Ready or Agrisure GT Corn). When used in this way, **Empyros™** will provide reduced competition of the weeds listed in Table 1 for a period of 30 or more days, thus improving the timing, flexibility, and effectiveness of the glyphosate-based product application. Follow all directions for use and restrictions on the glyphosate product label.

**Empyros™** may be applied preemergence at 0.75-1.0 qt/A (0.70-0.93 lbs. S-metolachlor/A; 0.019-0.025 lb. tolpyralate/A) as part of a two-pass weed control system when followed by Halex™ GT (S-metolachlor, mesotrione, and glyphosate, EPA Reg. No. 100-1282) in glyphosate resistant corn (e.g. Roundup Ready or Agrisure GT Corn). Apply **Empyros™** at 0.75 qt/A (0.70 lbs. S-metolachlor/A; 0.019 lb. tolpyralate/A) on soils with <3% OM and 1.0 qt/A (0.93 lbs. S-metolachlor/A; 0.025 lb. tolpyralate/A) on soils with >3% OM. Follow all directions for use and restrictions on each product label.

### **Empyros™ Programs in Glufosinate-Resistant Corn**

**Empyros™** may be applied early postemergence at 1.4 qt/A (1.30 lbs. S-metolachlor/A; 0.035 lb. tolpyralate/A) in tank mixture with glufosinate and applied over-the-top in field corn designated as glufosinate-resistant. To minimize weed competition with the crop, target the application of this mixture to weeds in the 1 to 2 inch range. Ammonium sulfate (AMS) may be added as a spray adjuvant as directed on the glufosinate label. However, AMS should be the only adjuvant added to this tank mixture. Do not add urea ammonium nitrate (UAN), crop oil concentrate (COC), non-ionic surfactants (NIS), or methylated seed oil (MSO) type adjuvants to these mixtures, or crop injury may occur. Follow all directions for use and restrictions on the glufosinate product label.

Alternatively, **Empyros™** may be applied preemergence at 1.4 qt/A (1.30 lbs. S-metolachlor/A; 0.035 lb. tolpyralate/A) as part of a two-pass weed control system when followed by a postemergence application of glufosinate in field corn designated as glufosinate-resistant. When used in this way, **Empyros™** will provide reduced competition of the weeds listed in Table 1 for a period of 30 or more days, thus improving the timing flexibility and effectiveness of the glufosinate application. Follow all directions for use and restrictions on the glufosinate product label.

### **Restrictions for all Corn Uses**

1. Do not apply more than 1.4 qt (1.30 lb. S-metolachlor/A; 0.035 lb tolpyralate/A) of **Empyros™** per acre per application.
2. Do not apply more than a total of 2.0 qt (1.85 lbs. S-metolachlor/A; 0.049 lb. tolpyralate/A) of **Empyros™** per acre per year.
3. Do not make more than 2 applications per year.
4. The retreatment interval is 14 days.
5. Do not apply **Empyros™** to corn that is greater than 20 inches tall or corn that is larger than V6 stage (6 leaf collars), whichever is more restrictive.
6. Do not graze or feed corn forage/silage from treated areas for 45 days following application.
7. Do not harvest corn for forage, grain, or stover within 45 days after application of **Empyros™**.
8. Do not harvest fresh market sweet corn within 35 days after application of **Empyros™**.
9. Do not make postemergence applications of **Empyros™** in a tank mix with any organophosphate or carbamate insecticide, or severe corn injury may occur.

### **Precautions for all Corn Uses**

1. **Empyros™** applied postemergence to corn that has received an at-planting application of terbufos or other organophosphate insecticide can result in severe corn injury. Environmental conditions that favor poor or slow corn growth will increase the risk or severity of the corn injury.
2. Postemergence corn applications of any organophosphate or carbamate insecticide within 7 days before or 7 days after a **Empyros™** application can result in severe corn injury. Environmental conditions that favor poor or slow corn growth will increase the risk or severity of the corn injury.

### **STORAGE AND DISPOSAL**

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

#### **Pesticide Storage**

Keep container tightly closed when not in use. Do not store near seeds, fertilizers, or food stuffs. Can be stored at temperatures as low as -10°F. Keep away from heat and flame.

#### **Pesticide Disposal**

Open dumping is prohibited. Waste resulting from the use of this product must be disposed of on site or at an approved waste disposal facility. Rinse spray equipment. 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 as described above, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

#### **Container Handling [less than 5 gallons]**

Non-refillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use and 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.

**Container Handling [greater than 5 gallon]**

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 person refilling. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

**DO NOT USE CONTAINERS FOR THE STORAGE OF FOOD, FEED, OR DRINKING WATER!**

**CONDITIONS OF SALE—LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES**

**Read the Conditions of Sale—Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.**

The directions on this label are believed to be reliable and must be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions or the failure to follow the label directions or good application practices, all of which are beyond the control of Helena Agri-Enterprises, LLC (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. To the extent consistent with applicable law, The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at Helena Agri-Enterprises, LLC's election, one of the following:

1. Refund of the purchase price paid by buyer or user for product bought, or
2. Replacement of the product used

To the extent consistent with applicable law, the Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income. The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.

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