

241-431

11/28/2011

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

NOV 28 2011

Jeffrey Birk, Ph.D.  
BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709-3528

Subject: Notification per PR Notice 98-10 – Footnotes added per CA restriction  
Arsenal PowerLine Herbicide  
EPA Reg. No. 241-431  
Application Dated – November 9, 2011

Dear Dr. Birk:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the subject product.

The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10. The label submitted with the application has been date-stamped "Notification" and will be placed in our records.

If you have any questions regarding this letter, please contact Maggie Rudick at (703) 347-0257 or [rudick.maggie@epa.gov](mailto:rudick.maggie@epa.gov).

Sincerely,

Kable Bo Davis, Product Manager 25  
Herbicide Branch  
Registration Division (7505P)



United States  
Environmental Protection Agency  
Washington, DC 20460

<input type="checkbox"/>	Registration
<input type="checkbox"/>	Amendment
<input checked="" type="checkbox"/>	Other

OPP Identifier Number

**Application for Pesticide - Section I**

1. Company/Product Number 241-431	2. EPA Product Manager Kable Davis	3. Proposed Classification <input type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) Arsenal PowerLine herbicide	PM# 25	
5. Name and Address of Applicant (Include ZIP Code) BASF 26 Davis Drive Research Triangle Park, NC 27709 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____	

**Section - II**

<input type="checkbox"/> Amendment - Explain below.	<input checked="" type="checkbox"/> Final printed labels in response to Agency letter dated <b>10/4/11</b>
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

**NOTIFICATION**  
**NOV 28 2011**

**Explanation:** Use additional page(s) if necessary. (For section I and Section II.)  
Notification with final print labeling for Arsenal PowerLine herbicide (241-431). This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.  
No PRIA fee is required for this notification. Contact Jeff Birk at 919-547-2622 (phone), 919-547-2850 (fax) or by Email at jeffrey.birk@basf.com

**Section - III**

1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes" Unit Packaging wgt.    No. per container		<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____
* Certification must be submitted		If "Yes" Package wgt    No. per container			
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container		5. Location of Label Directions <input type="checkbox"/>	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled			<input type="checkbox"/> Other _____		

**Section - IV**

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)					
Name Jeffrey H. Birk		Title Regulatory Manager		Telephone No. (Include Area Code) 919-547-2622	
<p align="center"><b>Certification</b></p> <p>I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment both under applicable law.</p>					6. Date Application Received (Stamped)
2. Signature 			3. Title Regulatory Manager		
4. Typed Name Jeffrey H. Birk		5. Date November 9, 2011			

NOTIFICATION

NOV 28 2010

# ARSENAL<sup>®</sup> POWERLine<sup>™</sup> herbicide

For the control of undesirable vegetation in grass pasture, rangeland and industrial noncropland areas including railroad, utility plant sites, petroleum tank farms, pumping installations, storage areas; utility, pipeline, and highway rights-of-way; fence rows; nonirrigation ditchbanks; and for the establishment and maintenance of wildlife openings

**Active Ingredient:**

isopropylamine salt of imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)\* . . . . . 26.7%

**Other Ingredients:** . . . . . 73.3%

**Total:** . . . . . 100.0%

\* Equivalent to 21.8% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon

EPA Reg. No. 241-431

EPA Est. No.

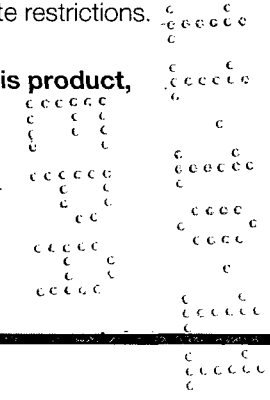
## KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCIÓN

Si usted no entiende la 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.)

See inside for complete **First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

Net Contents:



### FIRST AID

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

### HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).

### Precautionary Statements

#### Hazards to Humans and Domestic Animals

**CAUTION.** Harmful if swallowed, causes moderate eye irritation. Avoid contact with eyes or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

#### Personal Protective Equipment (PPE)

Some materials that are chemical resistant to this product are barrier laminate, butyl rubber, or polyethylene. If you want more options, follow the instructions for **Category A** on an EPA chemical-resistance category selection chart.

#### Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves for all mixers and loaders, plus applicators using handheld equipment

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

#### Engineering Controls

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

### USER SAFETY RECOMMENDATIONS

#### Users should:

- Wash hands with plenty of soap and water before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### Physical and Chemical Hazards

Spray solutions of **Arsenal® PowerLine™ herbicide** should be mixed, stored and applied only in stainless steel, fiberglass, plastic and plastic-lined steel containers.

**DO NOT** mix, store or apply **Arsenal PowerLine** or spray solutions of **Arsenal PowerLine** in unlined steel (except stainless steel) containers or spray tanks.

### Environmental Hazards

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas.

**DO NOT** apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwater or rinsate. See **Directions For Use** for additional precautions and requirements.

### 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.

**Arsenal® PowerLine™ herbicide** must be used only in accordance with instructions on the leaflet label attached to the container. Keep containers closed to avoid spills and contamination.

**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 **48 hours**.

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

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

**NONAGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

**DO NOT** enter or allow others to enter treated areas until sprays have dried.

**STORAGE AND DISPOSAL**

**DO NOT** contaminate water, food or feed by storage or disposal.

**Pesticide Storage**

**DO NOT** store below 10° F.

**Pesticide Disposal**

Wastes resulting from the use of this product must be disposed of on-site or at an approved waste disposal facility.

(continued)

**STORAGE AND DISPOSAL (continued)**

**Container Handling**

**Nonrefillable Container. DO NOT reuse or refill this container.** Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

**Triple rinse containers small enough to shake (capacity ≤ 5 gallons) as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

**Triple rinse containers too large to shake (capacity > 5 gallons) as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

**Pressure rinse as follows:** Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

**Refillable Container.** Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

**Triple rinse as follows:** To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% 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.

(continued)

## STORAGE AND DISPOSAL (continued)

### Container Handling (continued)

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

### In Case of Spill

In case of large-scale spillage regarding this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

### Steps to be taken in case material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing, and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

## RESTRICTIONS

**DO NOT** use on food crops. Keep from contact with fertilizers, insecticides, fungicides and seeds. **DO NOT** drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. **DO NOT** use on lawns, walks, driveways, tennis courts, or similar areas where roots of desirable vegetation may extend and be exposed to potential injury and/or mortality from root uptake of **Arsenal® PowerLine™ herbicide** unless this risk is acceptable. **DO NOT** side trim desirable vegetation with this product unless severe injury or plant death can be tolerated. **DO NOT** allow sprays to drift onto desirable plants.

Clean application equipment after using this product by thoroughly flushing with water.

## PRODUCT INFORMATION

**Use Sites.** **Arsenal PowerLine** is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to grass pasture and rangeland and industrial noncropland including utility plant sites, petroleum tank farms, pumping installations, storage areas; railroad, utility, and highway rights-of-way; fence rows; and nonirrigation ditchbanks including grazed or hayed areas within these sites. **Arsenal PowerLine** is recommended for the

establishment and maintenance of wildlife openings.

**Arsenal PowerLine** may also be used for the release of unimproved Bermudagrass (see specific directions) and for use under certain paved surfaces (see specific directions).

**Application Methods.** **Arsenal PowerLine** will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species. **Arsenal PowerLine** will provide residual control of labeled weeds that germinate in the treated areas. This product may be applied either preemergence or postemergence to the weeds; however, postemergence application is the method of choice in most situations, particularly for perennial species. For maximum activity, weeds should be growing vigorously at the time of postemergence application, and the spray solution should include a surfactant (see **ADJUVANTS** section for specific recommendations).

These solutions may be applied selectively using low-volume techniques or may be applied broadcast by using ground equipment or aerial equipment. In addition, **Arsenal PowerLine** may also be used for stump and cut stem treatments (see specific directions).

**Herbicidal Activity.** **Arsenal PowerLine** is readily absorbed through leaves, stems, and roots and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground storage organs which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until 2 weeks after application. Complete kill of plants may not occur for several weeks. Applications of **Arsenal PowerLine** are rainfast 1 hour after treatment.

## PRECAUTIONS FOR AVOIDING INJURY TO NONTARGET PLANTS

Untreated trees can occasionally be affected by root uptake of **Arsenal PowerLine** through movement into the top soil. Injury or loss of desirable trees or other plants may result if **Arsenal PowerLine** is applied on or near desirable trees or other plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots.

## SPRAY DRIFT REQUIREMENTS

### Aerial Applications

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.

- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
- Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

**Ground Boom Applications**

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

**Wind Erosion**

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.

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**ADJUVANTS**

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**Postemergence applications of Arsenal® PowerLine™ herbicide require the addition of a spray adjuvant for optimum herbicide performance.**

**Nonionic Surfactants.** Use a nonionic surfactant (NIS) at the rate 0.25% volume/volume (v/v) or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with an HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product (alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements).

**Methylated Seed Oils (MSO) or Vegetable Oil Concentrates.** Instead of a surfactant, a methylated seed oil or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable-based seed oil concentrates should be mixed at a rate of 1% of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in **Arsenal PowerLine** deposition and uptake by plants under moisture or temperature stress.

**Silicone-based Surfactants.** See manufacturer's label for specific rate recommendations. Silicone-based surfactants may reduce the surface tension of the spray droplet allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

**Fertilizer/Surfactant Blends.** Nitrogen-based liquid fertilizers, such as 28%N, 32%N, 10-34-0 or ammonium sulfate, may be added at the rate of 2 to 3 pints per acre in combination with the recommended rate of nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate. The use of fertilizers in a tank mix without a nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate is not recommended.

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**APPLICATION METHODS**

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**AERIAL APPLICATIONS**

All precautions must be taken to minimize or eliminate spray drift. Fixed-wing aircraft and helicopters can be used to apply **Arsenal PowerLine**. However, **DO NOT** make applications by fixed-wing aircraft unless appropriate buffer zones can be maintained to prevent spray drift out of the target area or, when treating open tracts of land, spray drift as a result of fixed-wing aircraft application can be tolerated. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a **Microfoil™ boom**, **Thru-Valve™ boom** or raindrop nozzles, must be used and calibrated. Except when applying with a **Microfoil boom**, a drift control agent may be added at the recommended label rate. Side trimming is not recommended with **Arsenal PowerLine** unless death of treated tree can be tolerated.

Uniformly apply the specified amount of **Arsenal PowerLine** in 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift. Include in the spray solution a nonionic surfactant or methylated seed oil or manufacturer's label rate of a silicone-based surfactant (see the **ADJUVANTS** section of this label for specific recommendations). A foam-reducing agent may be added at the recommended label rate, if needed.

**IMPORTANT.** Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

**GROUND APPLICATIONS**

**Broadcast.** Use 5 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift. To minimize spray drift, select proper nozzles to avoid spraying a fine mist. Use pressures less than 50 psi, and **DO NOT** spray under gusty or windy conditions. Add a foam-reducing agent, if needed, and a spray pattern indicator, if desired, at the recommended label rates. Clean application equipment after using this product by thoroughly flushing with water.

When making applications to rights-of-way corridors where desirable tree roots may extend, use 1 to 3 pints of **Arsenal® PowerLine™ herbicide** per acre in combination with recommended tank mixes. Use rates higher than 3 pints per acre in these situations may cause injury or death of desirable trees when their roots extend into treated zones.

**FOLIAR**

**Side Trimming**

**DO NOT** side trim with **Arsenal PowerLine** unless severe injury or death of the treated tree can be tolerated.

**Arsenal PowerLine** is readily translocated and can result in death of the entire tree.

**Low-volume Foliar**

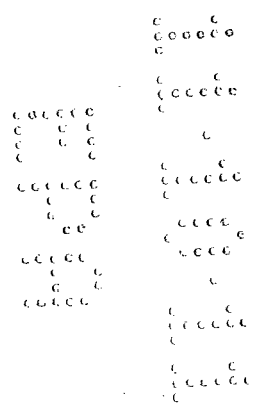
Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.5% to 5% **Arsenal PowerLine** plus surfactant (see the **ADJUVANTS** section of this label for specific recommendations). A foam-reducing agent may be applied at the recommended label rate, if needed. For control of difficult brush species (see **WEEDS CONTROLLED** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 6 pints of **Arsenal PowerLine** per acre. Excessive wetting of foliage is not recommended. See the following mixing guide for some suggested volumes of **Arsenal PowerLine** and water.

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**BRUSH CONTROL**

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Use the specified rate of **Arsenal PowerLine** with the preferred application technique for the control of undesirable brush.





### TANK MIXES AND APPLICATION RATES\*

Target Vegetation	Rate of Arsenal® PowerLine™ herbicide	Tank Mix
Mixed hardwoods without elm, locust, or pine	1.0 to 1.5% by volume	Surfactant
Mixed hardwoods containing elm, locust, and pine	0.5 to 1.0% by volume	<b>Accord®</b> at 2 to 3% by volume plus surfactant
Mixed hardwoods with locust and pine, but no elm	0.5 to 1.0% by volume	<b>Krenite®</b> at 2 to 5% by volume plus surfactant
Mixed hardwoods with locust and elm, but no pine	0.5 to 1.0% by volume	<b>Escort®</b> at 2 ozs/acre or 2.3 grams/gallon plus surfactant

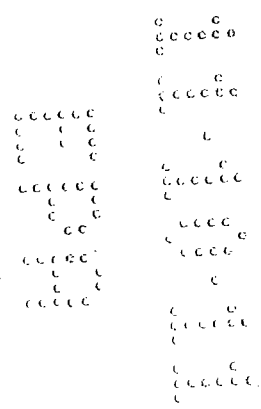
\* Tank mixes with 2,4-D or products containing 2,4-D have resulted in reduced efficacy of **Arsenal PowerLine**.

### MIXING CHART

% Solution	Arsenal PowerLine per Gallon of Mix (fl ozs)	Arsenal PowerLine per 4-gallon Backpack (fl ozs)
0.5%	0.6	2.6
1.0%	1.3	5.1
2.0%	2.6	10.2
3.0%	3.8	15.4
5.0%	6.4	25.6

### MEASURING CHART

128 fluid ounces	=	1 gallon
16 fluid ounces	=	1 pint
8 pints	=	1 gallon
4 quarts	=	1 gallon
2 pints	=	1 quart



**Application Instructions.** For low volume, select proper nozzles so that herbicide is not overapplied. Best results are achieved when the spray covers the crown and approximately 70% of the plant. The use of an even flat-fan tip with a spray angle of 40 degrees or less will aid in proper deposition.

Recommended tip sizes include 4004E or 1504E. For a straight stream and cone pattern, adjustable cone nozzles, such as 5500 X3 or 5500 X4, may be used. Attaching a roll-over valve onto a Spraying Systems Model 30 gunjet or other similar spray guns allows for the use of both a flat-fan and cone tips on the same gun.

**Proper Spray Pattern.** Moisten but **DO NOT** drench target vegetation causing spray solution to run off.

**Low Volume with Backpacks.** For brush up to 4-foot tall, spray down on the crown covering crown and penetrating approximately 70% of the plant.

For brush 4-feet to 8-feet tall, swipe the sides of target vegetation by directing spray to at least 2 sides of the plant in smooth vertical motions from the crown to the bottom. Make sure to cover the crown whenever possible.

For brush over 8-feet tall, lace sides of the brush by directing spray to at least 2 sides of the target in smooth zigzag motions from crown to bottom.

**Low Volume with Hydraulic Handgun Application Equipment.** Use same technique as described for **Low Volume with Backpacks.**

For broadcast applications, simulate a gentle rain near the top of target vegetation allowing spray to contact the crown and penetrate the target foliage without falling to the understory. Herbicide spray solution that contacts the understory may result in severe injury or death of plants in the understory.

SPRAY SOLUTION MIXING GUIDE FOR LOW-VOLUME APPLICATIONS					
Amount of Spray Solution Prepared (gallons)	Desired Concentration (fluid volume)				
	0.5%	0.75%	1%	1.5%	5%
	(amount of Arsenal® PowerLine™ herbicide to use)				
1	0.6 fl oz	0.9 fl oz	1.3 fl ozs	1.9 fl ozs	6.5 fl ozs
3	1.9 fl ozs	2.8 fl ozs	3.8 fl ozs	5.8 fl ozs	1.2 pints
4	2.5 fl ozs	3.8 fl ozs	5.1 fl ozs	7.7 fl ozs	1.6 pints
5	3.2 fl ozs	4.8 fl ozs	6.5 fl ozs	9.6 fl ozs	2 pints
50	2 pints	3 pints	4 pints	6 pints	10 quarts
100	4 pints	6 pints	8 pints	6 quarts	5 gallons

2 tablespoons = 1 fluid ounce

**High-volume Foliar**

For optimum performance when spraying medium-density to high-density brush, use equipment calibrated to deliver up to 100 gallons of spray solution per acre (GPA). Spray solutions exceeding 100 GPA may result in excessive spray runoff causing increased ground cover injury and injury to desirable species.

To prepare the spray solution, thoroughly mix **Arsenal PowerLine** at a rate of 2 to 6 pints per acre (see **GROUND APPLICATIONS** section) in water and add a surfactant (see **ADJUVANTS** section for specific recommendations and rates of surfactants). A foam-reducing agent may be added at the recommended label rate, if needed. For control of difficult species (see **WEEDS CONTROLLED** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 6 pints of **Arsenal PowerLine** per acre. Uniformly cover the foliage of the vegetation to be controlled, but **DO NOT** apply to runoff. Excessive wetting of foliage is not recommended.

**Tank Mixes for Brush Control**

**Arsenal PowerLine** may be tank mixed with **Accord®**, **Banvel®**, **Escort®**, **Garlon® 3A**, **Krenite®**, **Roundup®**, **Telar®**, **Tordon® K**, and **Vanquish®** to provide control of **Arsenal PowerLine**-tolerant species.

Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label when making an application involving tank mixes. Tank mixing with 2,4-D, or products which contain 2,4-D, has resulted in reduced performance of **Arsenal PowerLine**.

**Invert Emulsions.** **Arsenal PowerLine** can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray runoff resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

## CUT SURFACE

### Cut Stubble

**Arsenal® PowerLine™ herbicide** can be applied within 2 weeks after mechanical mowing or cutting of brush. To suppress or control resprouting, uniformly apply a spray solution of **Arsenal PowerLine** at the rate of 1 to 2 pints per acre to the cut area. **Arsenal PowerLine** may be tank mixed with **Tordon® K** or picloram to aid in control or suppression of brush. The addition of 5% (v/v) or more of a penetrating agent can aid in uptake through the bark or exposed roots.

Cut stubble applications are made to the soil and cut brush stumps. This type of application may increase ground cover injury. However, vegetation will recover. Making applications of **Arsenal PowerLine** directly to the soil can increase potential root uptake causing injury or death of desirable trees.

Efficacy can be increased, and root uptake by desirable vegetation can be decreased, if the brush is allowed to regrow and the foliage is treated. See the **APPLICATION METHODS** section of this label.

### Stump and Cut-stem Treatments

**Arsenal PowerLine** may be used to control undesirable woody vegetation on noncropland by applying the **Arsenal PowerLine** solution to the cambium area of freshly cut stump surfaces or to fresh cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. **DO NOT** overapply solution causing runoff or puddling.

**Mixing.** **Arsenal PowerLine** may be mixed as either a concentrated or dilute solution for stump and cut stem treatments. The dilute solution may be used for applications to the surface of the stump or to cuts on the stem of the target woody vegetation. Concentrated solutions may be used for applications to cuts on the stem. Use of the concentrated solution permits application to fewer cuts on the stem, especially for large-diameter trees. Follow the application instructions to determine proper application techniques for each type of solution.

To prepare a dilute solution, mix 8 to 12 fluid ounces of **Arsenal PowerLine** with 1 gallon of water. If temperatures are such that freezing of the spray mixture may occur, antifreeze (ethylene glycol) may be used according to manufacturer's label to prevent freezing. The use of a surfactant or penetrating agent may improve uptake through partially callused cambiums. To prepare a concentrated solution, mix 2 quarts of **Arsenal PowerLine** with no more than 1 quart of water.

### Application with Dilute Solutions

**For cut stump treatments.** Spray or brush the solution onto the cambium area of the freshly cut stump surface. Ensure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

**For tree-injection treatments.** Using standard injection equipment, apply 1 milliliter of solution at each injection site

around the tree with no more than 1-inch intervals between cut edges. Ensure that the injector completely penetrates the bark at each injection site.

**For frill or girdle treatments.** Using a hatchet, machete, or similar device, make cuts through the bark at intervals around the tree with no more than 2-inch intervals between cut edges. Spray or brush the solution into each cut until thoroughly wet.

### Application with Concentrated Solutions

**For tree injection treatments.** Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least 1 injection cut for every 3 inches of Diameter at Breast Height (DBH) on the target tree. For example, a 3-inch DBH tree will receive 1 injection cut, and a 6-inch DBH tree will receive 2 injection cuts. On trees requiring more than 1 injection site, place the injection cuts at approximately equal intervals around the tree.

**For frill or girdle treatments.** Using a hatchet, machete, or similar device, make cuts through the bark at approximately equal intervals around the tree. Make at least 1 cut for every 3 inches of DBH on the target tree. For example, a 3-inch DBH tree will receive 1 cut, and a 6-inch DBH tree will receive 2 cuts. Spray or brush the solution into each cut until thoroughly wet.

**NOTE:** Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

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## FOR CONTROL OF UNDESIRABLE WEEDS UNDER PAVED SURFACES

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**Arsenal PowerLine** can be used under asphalt, pond liners and other paved areas **ONLY** in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

**Arsenal PowerLine** should be used only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, they should be removed by scalping with a grader blade to a depth sufficient to insure their complete removal.

**IMPORTANT.** Paving should follow **Arsenal PowerLine** applications as soon as possible. **DO NOT** apply where the chemical may contact the roots of desirable trees or other plants.

The product may not be used under pavement on residential properties such as driveways or parking lots, nor in recreational areas such as under bike or jogging paths, golf-cart paths, or tennis courts, or where landscape plantings could be anticipated. Injury or death of desirable plants may result if this product is applied where roots are present or where they may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities or drip line.

**APPLICATION DIRECTIONS FOR USE UNDER PAVED SURFACES**

Applications should be made to the soil surface only when final grade is established. **DO NOT** move soil following **Arsenal® PowerLine™** herbicide application.

Apply **Arsenal PowerLine** in sufficient water (at least 100 gallons per acre) to ensure thorough and uniform wetting of the soil surface, including the shoulder areas. Add **Arsenal PowerLine** at a rate of 6 pints per acre (2.2 fl ozs per 1000 square feet) to clean water in the spray tank during the filling operation. Agitate before spraying.

If the soil is not moist prior to treatment, incorporation of **Arsenal PowerLine** is needed for herbicide activation. **Arsenal PowerLine** can be incorporated into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. **DO NOT** allow treated soil to wash or move into untreated areas.

**FOR CONTROL OF UNDESIRABLE WEEDS IN UNIMPROVED BERMUDAGRASS AND BAHIAGRASS**

**Arsenal PowerLine** may be used on unimproved Bermudagrass and Bahiagrass turf on roadsides, utility rights-of-way and other noncropland industrial sites. The application of **Arsenal PowerLine** on established common and coastal Bermudagrass and Bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the Bermudagrass and Bahiagrass. Treatment of Bermudagrass with **Arsenal PowerLine** results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre with a spray pressure 20 to 50 psi.

**IMPORTANT.** Temporary yellowing of grass may occur when treatment is made after growth commences. **DO NOT** add surfactant in excess of the recommended rate (1 fl oz per 25 gallons of spray solution). **DO NOT APPLY** to grass during its first growing season. **DO NOT APPLY** to grass that is under stress from drought, disease, insects, or other causes.

**DOSAGE RATES AND TIMING**

**BERMUDAGRASS**

Apply **Arsenal PowerLine** at 6 fl ozs to 12 fl ozs per acre when the Bermudagrass is dormant. Apply **Arsenal PowerLine** at 6 fl ozs to 8 fl ozs per acre after the Bermudagrass has reached full greenup. Applications made during greenup will delay greenup. Include a surfactant in the spray solution (see preceding **IMPORTANT** statements).

For additional preemergence control of annual grasses and small-seeded broadleaf weeds, add **Pendulum® AquaCap™** herbicide at the rate of 2.1 to 4.2 quarts per acre. Consult the **Pendulum** label for weeds controlled and for other use directions and precautions.

For control of Johnsongrass in Bermudagrass turf, apply **Arsenal PowerLine** at 8 fl ozs per acre plus **Roundup® herbicide** at 12 fl ozs per acre plus surfactant. For additional control of broadleaves and vines, **Garlon® 3A** may be added to the above mix at the rate of 1 to 2 pints per acre. Observe all precautions and restrictions on the **Garlon 3A** and **Roundup** labels.

**BAHIAGRASS**

Apply **Arsenal PowerLine** at 4 fl ozs to 8 fl ozs per acre when the Bahiagrass is dormant or after the grass has initiated greenup but has not exceeded 25% greenup. Include in the spray solution a surfactant (see **ADJUVANTS** section for specific recommendations on surfactants).

**Weeds Controlled in Unimproved Bermudagrass and Bahiagrass**

Bedstraw*	<i>Gallium</i> spp.
Bishopweed*	<i>Ptilimnium capillaceum</i>
Buttercup*	<i>Ranunculus parviflorus</i>
Carolina geranium	<i>Geranium carolinianum</i>
Fescue	<i>Festuca</i> spp.
Foxtail	<i>Setaria</i> spp.
Little barley	<i>Hordeum pusillum</i>
Seedling Johnsongrass	<i>Sorghum halepense</i>
White clover	<i>Trifolium repens</i>
Wild carrot	<i>Daucus carota</i>
Yellow woodsorrel	<i>Oxalis stricta</i>

\* Use not permitted in California unless otherwise directed by supplemental labeling.

**GRASS GROWTH AND SEEDHEAD SUPPRESSION**

**Arsenal PowerLine** may be used to suppress growth and seedhead development of certain turfgrass in unimproved areas. When applied to desirable turf, **Arsenal PowerLine** may result in temporary turf damage and/or discoloration. Effects to the desirable turf may vary with environmental conditions. For optimum performance, application should be made prior to culm elongation. Applications may be made before or after mowing. If applied prior to mowing, allow at least 3 days of active growth before mowing. If following a mowing, allow sufficient time for the grasses to recover before applying this product or injury may be amplified.

**DO NOT APPLY** to turf under stress (drought, cold, insect damaged, etc.) or severe injury or death may occur.

**BERMUDAGRASS**

Apply **Arsenal PowerLine** at 6 fl ozs to 8 fl ozs per acre from early greenup to prior to seedhead initiation. **DO NOT** add a surfactant for this application.

**COOL SEASON UNIMPROVED TURF**

Apply **Arsenal PowerLine** at 2 fl ozs per acre plus 0.25% nonionic surfactant. For increased suppression, **Arsenal PowerLine** may be tank mixed with such products as **Campaign®** (24 ozs per acre) or **Embark®** (8 ozs per acre).

Tank mixes may increase injury to desired turf. Consult each product label for recommended turf species and other use directions and precautions. Tank mixes with 2,4-D or products containing 2,4-D may decrease the effectiveness of **Arsenal® PowerLine™ herbicide**.

5% **Arsenal PowerLine** plus an adjuvant. For increased burndown, include **Finale** or **Roundup**, or similar products. For added residual weed control or to increase the weed spectrum, add **Pendulum** or diuron. Always follow the more restrictive label when tank mixing.

### TOTAL VEGETATION CONTROL WHERE BARE GROUND IS DESIRED

**Arsenal PowerLine** is an effective herbicide for preemergence or postemergence control of many annual and perennial broadleaf and grass weeds where bare ground is desired. **Arsenal PowerLine** is particularly effective on hard-to-control perennial grasses. **Arsenal PowerLine** at 1.5 pints to 6 pints per acre can be used alone or in tank mix with herbicides such as **Banvel®**, **Finale®**, **Karmex®**, **Oust®**, **Pendulum®**, **Roundup®**, simazine, or **Vanquish®**. The degree and duration of control are dependent on the rate of **Arsenal PowerLine** used, tank mix partner, the volume of carrier, soil texture, rainfall and other conditions.

Consult manufacturers labels for specific rates and weeds controlled. Always follow the more restrictive label when making an application involving tank mixes.

#### TANK MIX INSTRUCTIONS FOR BARE GROUND

##### Herbicide Rates per Acre\*

<b>Arsenal PowerLine</b>	<b>Pendulum® AquaCap™ herbicide</b>	<b>Pendulum® 3.3 EC herbicide</b>	Diuron
(pints)	(quarts)	(quarts)	(lbs ai)
1.5 to 3	4.2	4.8	4 to 6
2 to 4	4.2	4.8	6 to 10
3 to 6	4.2	4.8	8 to 12

\* Use higher rates for fall applications and in areas that have not been previously treated or that feature heavy infestations.

Applications of **Arsenal PowerLine** may be made at any time of the year. Use equipment calibrated to deliver desired gallons per acre spray volume and uniformly distribute the spray pattern over the treated area.

**Postemergence Applications.** Always use a spray adjuvant (see **ADJUVANTS** section of this label) when making a postemergence application. For optimum performance on tough-to-control annual grasses, applications should be made at a total volume of 100 gallons per acre or less. For quicker burndown or brown-out of target weeds, **Arsenal PowerLine** may be tank mixed with products such as **Finale** or **Roundup**. Tank mixes with 2,4-D or products containing 2,4-D have reduced performance of **Arsenal PowerLine**. Always follow the more restrictive label when tank mixing.

#### SPOT TREATMENTS

**Arsenal PowerLine** may be used as a follow-up treatment to control escapes or weed encroachment in a bareground situation. To prepare the spray solution, thoroughly mix in each gallon of water 0.5% to

### FOR SPOT TREATMENT WEED CONTROL IN GRASS PASTURE AND RANGELAND

For the control of undesirable vegetation in grass pasture and rangeland, **Arsenal PowerLine** may be applied as a spot treatment at a rate of 2 fl ozs to 48 fl ozs of product per treated acre using any of the described ground application methods. Spot applications to grass pasture and rangeland may not exceed more than 1/10 of the area to be grazed or cut for hay. See appropriate sections of this label for specific use directions for the application method and vegetation control desired. **DO NOT** apply more than 48 fl ozs per acre per year.

#### GRAZING AND HAYING RESTRICTIONS

There are no grazing restrictions following **Arsenal PowerLine** application. **DO NOT** cut forage grass for hay for 7 days after **Arsenal PowerLine** application.

#### INSTRUCTIONS FOR RANGELAND USE

**Arsenal PowerLine** may be applied to rangeland for the control of undesirable vegetation to achieve 1 or more of the following vegetation management objectives:

1. To control undesirable (nonnative, invasive and noxious) plant species
2. To control undesirable vegetation to aid in the establishment of desirable rangeland plant species
3. To control undesirable vegetation to aid in the establishment of desirable rangeland vegetation following a fire
4. To control undesirable vegetation to reduce wildfire fuel
5. To release existing desirable rangeland plant communities from the competitive pressure of undesirable plant species
6. To control undesirable vegetation to improve wildlife habitat

To ensure the protection of threatened and endangered plants when applying **Arsenal PowerLine** to rangeland:

1. Federal agencies must follow NEPA regulations to ensure protection of threatened and endangered plants.
2. State agencies must work with the Fish and Wildlife Service or the Service's designated state conservation agency to ensure protection of threatened and endangered plants.
3. Other organizations or individuals must operate under a Habitat Conservation Plan if threatened or endangered plants are known to be present on the land to be treated.

See the appropriate section(s) of this label for specific use directions for the desired rangeland vegetation management objective.

**Arsenal PowerLine** should only be applied to a given rangeland acre as specific weed problems arise. Long-term control of undesirable weed species ultimately depends on

the successful use of land management practices that promote the growth and sustainability of desirable rangeland plant species.

### ROTATIONAL CROP INSTRUCTIONS

Rotational crops may be planted 12 months after applying **Arsenal® PowerLine™ herbicide** at the specified pasture and rangeland rate. Following 12 months after an **Arsenal PowerLine** application and before planting any crop, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted in the previously treated area in the grass pasture/rangeland and grown to maturity. The test strip should include low areas and knolls, and include variations in soil type and pH within the treated area. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year.

Use of **Arsenal PowerLine** in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

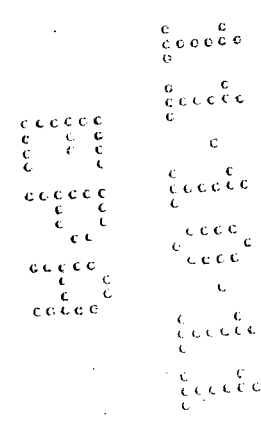
### WEEDS CONTROLLED

**Arsenal PowerLine** will provide preemergence or post-emergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of **Arsenal PowerLine**.

**For established biennials and perennials, postemergence applications of Arsenal PowerLine are recommended.** The rates shown below pertain to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low-volume spray solutions (see **Low-volume Foliar** section of **GROUND APPLICATIONS**); low-volume applications may provide control of the target species with less **Arsenal PowerLine** per acre than is shown for the broadcast treatments. **Arsenal PowerLine** may be used only in accordance with the instructions on this label.

#### RESISTANT BIOTYPES

Naturally occurring biotypes (a plant within a given species that has a slightly different but distinct genetic makeup from other plants of the same species) of some weeds listed on this label may not be effectively controlled by this and/or other herbicides (**Oust®**) with the ALS/AHAS enzyme-inhibiting mode of action. If naturally occurring ALS/AHAS-resistant biotypes are present in an area, **Arsenal PowerLine** should be tank mixed or applied sequentially with an appropriate registered herbicide having a different mode of action to ensure control.


















**Weeds Controlled**

**GRASSES**

Common Name	Species	Growth Habit <sup>2</sup>
<b>Apply 2 to 3 pints per acre<sup>1</sup></b>		
Annual bluegrass	( <i>Poa annua</i> )	A
Broadleaf signalgrass	( <i>Brachiaria platyphylla</i> )	A
Canada bluegrass	( <i>Poa compressa</i> )	P
Downy brome	( <i>Bromus tectorum</i> )	A
Fescue	( <i>Festuca</i> spp.)	A/P
Foxtail	( <i>Setaria</i> spp.)	A
Italian ryegrass	( <i>Lolium multiflorum</i> )	A
Johnsongrass	( <i>Sorghum halepense</i> )	P
Kentucky bluegrass	( <i>Poa pratensis</i> )	P
Lovegrass	( <i>Eragrostis</i> spp.)	A/P
Orchardgrass	( <i>Dactylis glomerata</i> )	P
Paragrass	( <i>Brachiaria mutica</i> )	P
Quackgrass	( <i>Agropyron repens</i> )	P
Sandbur	( <i>Cenchrus</i> spp.)	A
Sand dropseed	( <i>Sporobolus cryptandrus</i> )	A
Smooth brome	( <i>Bromus inermis</i> )	P
Vaseygrass	( <i>Paspalum urvillei</i> )	P
Wild oats	( <i>Avena fatua</i> )	A
Witchgrass	( <i>Panicum capillare</i> )	A

**Apply 3 to 4 pints per acre<sup>1</sup>**

Barnyardgrass <sup>3</sup>	( <i>Echinochloa crus-galli</i> )	A
Beardgrass	( <i>Andropogon</i> spp.)	P
Bluegrass, annual <sup>3</sup>	( <i>Poa annua</i> )	A
Cheat	( <i>Bromus secalinus</i> )	A
Crabgrass	( <i>Digitaria</i> spp.)	A
Crowfootgrass <sup>3</sup>	( <i>Dactyloctenium aegyptium</i> )	A
Fall panicum	( <i>Panicum dichotomiflorum</i> )	A
Giant reed	( <i>Arundo donax</i> )	P
Goosegrass	( <i>Eleusine indica</i> )	A 
Itchgrass <sup>3</sup>	( <i>Rottboellia exaltata</i> )	A 
Junglece <sup>3</sup>	( <i>Echinochloa colonum</i> )	 A 
Lovegrass <sup>3</sup>	( <i>Eragrostis</i> spp.)	 A 
Maidencane	( <i>Panicum hemitomon</i> )	 A 
Panicum, browntop <sup>3</sup>	( <i>Panicum fasciculatum</i> )	 A 
Panicum, Texas <sup>3</sup>	( <i>Panicum texanum</i> )	 A 
Prairie threeawn	( <i>Aristida oligantha</i> )	P 
Reed canarygrass	( <i>Phalaris arundinacea</i> )	P 
Sandbur, field <sup>3</sup>	( <i>Cenchrus incertus</i> )	A 
Signalgrass <sup>3</sup>	( <i>Brachiaria</i> spp.)	A
Torpedograss	( <i>Panicum repens</i> )	P
Wild barley	( <i>Hordeum</i> spp.)	A
Wooly cupgrass <sup>3</sup>	( <i>Eriochloa villosa</i> )	A



**Weeds Controlled** (continued)

**GRASSES** (continued)

Common Name	Species	Growth Habit <sup>2</sup>
<b>Apply 4 to 6 pints per acre<sup>1</sup></b>		
Bahiagrass	( <i>Paspalum notatum</i> )	P
Bermudagrass <sup>4</sup>	( <i>Cynodon dactylon</i> )	P
Big bluestem	( <i>Andropogon gerardii</i> )	P
Cattail	( <i>Typha</i> spp.)	P
Cogongrass	( <i>Imperata cylindrica</i> )	P
Dallisgrass	( <i>Paspalum dilatatum</i> )	P
Feathertop	( <i>Pennisetum villosum</i> )	P
Guineagrass	( <i>Panicum maximum</i> )	P
Phragmites	( <i>Phragmites australis</i> )	P
Prairie cordgrass	( <i>Spartina pectinata</i> )	P
Saltgrass <sup>4</sup>	( <i>Distichlis stricta</i> )	P
Sand dropseed	( <i>Sporobolus cryptandrus</i> )	P
Sprangletop <sup>2</sup>	( <i>Leptochloa</i> spp.)	A
Timothy	( <i>Phleum pratense</i> )	P
Wirestem muhly	( <i>Muhlenbergia frondosa</i> )	P

**BROADLEAF WEEDS**

**Apply 2 to 3 pints per acre<sup>1</sup>**

African rue <sup>10</sup>	( <i>Peganum harmala</i> )	P
Alligatorweed	( <i>Alternanthera philoxeroides</i> )	A/P
Burdock	( <i>Arctium</i> spp.)	B
Carolina geranium	( <i>Geranium carolinianum</i> )	A
Carpetweed	( <i>Mollugo verticillata</i> )	A
Clover	( <i>Trifolium</i> spp.)	A/P
Common chickweed	( <i>Stellaria media</i> )	A
Common ragweed	( <i>Ambrosia artemisiifolia</i> )	A
Dandelion	( <i>Taraxacum officinale</i> )	P
Dogfennel	( <i>Eupatorium capillifolium</i> )	A
Filaree	( <i>Erodium</i> spp.)	A
Fleabane	( <i>Erigeron</i> spp.)	A
Hoary vervain	( <i>Verbena stricta</i> )	P
Indian mustard	( <i>Brassica juncea</i> )	A
Kochia <sup>5</sup>	( <i>Kochia scoparia</i> )	A
Lambsquarters	( <i>Chenopodium album</i> )	A
Lespedeza	( <i>Lespedeza</i> spp.)	P
Miners lettuce	( <i>Montia perfoliata</i> )	A
Mullein	( <i>Verbascum</i> spp.)	B
Nettleleaf goosefoot	( <i>Chenopodium murale</i> )	A
Oxeye daisy	( <i>Chrysanthemum leucanthemum</i> )	P
Pepperweed	( <i>Lepidium</i> spp.)	A
Pigweed	( <i>Amaranthus</i> spp.)	A
Puncturevine	( <i>Tribulus terrestris</i> )	A
Russian thistle	( <i>Salsola kali</i> )	A



**Weeds Controlled** (continued)

**BROADLEAF WEEDS** (continued)

Common Name	Species	Growth Habit <sup>2</sup>
<b>Apply 2 to 3 pints per acre<sup>1</sup> (continued)</b>		
Smartweed	( <i>Polygonum</i> spp.)	A
Sorrell	( <i>Rumex</i> spp.)	P
Sunflower	( <i>Helianthus</i> spp.)	A
Sweet clover	( <i>Melilotus</i> spp.)	A
Tansymustard	( <i>Ambrosia psilostachya</i> )	P
Wild carrot	( <i>Daucus carota</i> )	B
Wild lettuce	( <i>Lactuca</i> spp.)	A/B
Wild parsnip	( <i>Pastinaca sativa</i> )	B
Wild turnip	( <i>Brassica campestris</i> )	B
Woollyleaf bursage	( <i>Franseria tomentosa</i> )	P
Yellow woodsorrel	( <i>Oxalis stricta</i> )	P

**Apply 3 to 4 pints per acre<sup>1</sup>**

Broom snakeweed <sup>6</sup>	( <i>Gutierrezia sarothrae</i> )	P
Bull thistle	( <i>Cirsium vulgare</i> )	B
Burclover <sup>3</sup>	( <i>Medicago</i> spp.)	A
Chickweed, mouseear <sup>5</sup>	( <i>Cerastium vulgatum</i> )	A
Clover, hop <sup>3</sup>	( <i>Trifolium procumbens</i> )	A
Cocklebur	( <i>Xanthium strumarium</i> )	A
Cudweed <sup>3</sup>	( <i>Gnaphalium</i> spp.)	A
Desert camelthorn	( <i>Alhagi pseudalhagi</i> )	P
Diffuse knapweed	( <i>Centaurea diffusa</i> )	A
Dock	( <i>Rumex</i> spp.)	P
Fiddleneck <sup>3</sup>	( <i>Amsinckia intermedia</i> )	A
Goldenrod	( <i>Solidago</i> spp.)	P
Henbit <sup>3</sup>	( <i>Lamium amplexicaule</i> )	A
Knotweed, prostrate <sup>3</sup>	( <i>Polygonum aviculare</i> )	A/P
Pokeweed	( <i>Phytolacca americana</i> )	P
Purple loosestrife <sup>6</sup>	( <i>Lythrum salicaria</i> )	P
Purslane	( <i>Portulaca</i> spp.)	A
Pusley, Florida <sup>3</sup>	( <i>Richardia scabra</i> )	A
Rocket, London <sup>3</sup>	( <i>Sisymbrium irio</i> )	A
Rush skeletonweed <sup>6</sup>	( <i>Chondrilla juncea</i> )	B
Saltbush	( <i>Atriplex</i> spp.)	A
Shepherdspurse <sup>3</sup>	( <i>Capsella bursa-pastoris</i> )	A
Spurge, annual <sup>3</sup>	( <i>Euphorbia</i> spp.)	A
Stinging nettle <sup>6</sup>	( <i>Urtica dioica</i> )	P
Velvetleaf <sup>3</sup>	( <i>Abutilon theophrasti</i> )	A
Yellow starthistle	( <i>Centaurea solstitialis</i> )	A

**Weeds Controlled** (continued)

**BROADLEAF WEEDS** (continued)

Common Name	Species	Growth Habit <sup>2</sup>
<b>Apply 4 to 6 pints per acre<sup>1</sup></b>		
Arrowwood	( <i>Pluchea sericea</i> )	A
Canada thistle	( <i>Cirsium arvense</i> )	P
Giant ragweed	( <i>Ambrosia trifida</i> )	A
Grey rabbitbrush	( <i>Chrysothamnus nauseosus</i> )	P
Japanese bamboo/knotweed	( <i>Polygonum cuspidatum</i> )	P
Little mallow	( <i>Malva parviflora</i> )	B
Milkweed	( <i>Asclepias</i> spp.)	P
Primrose	( <i>Oenothera kunthiana</i> )	P
Russian knapweed	( <i>Centaurea repens</i> )	P
Sago pondweed <sup>10</sup>	( <i>Potamogeton pectinatus</i> )	P
Silverleaf nightshade	( <i>Solanum elaeagnifolium</i> )	P
Sowthistle	( <i>Sonchus</i> spp.)	A
Texas thistle	( <i>Cirsium texanum</i> )	P

**VINES AND BRAMBLES**

**Apply 1 pint per acre**

Field bindweed	( <i>Convolvulus arvensis</i> )	P
Hedge bindweed	( <i>Calystegia sepium</i> )	A

**Apply 2 to 3 pints per acre<sup>1</sup>**

Wild buckwheat	( <i>Polygonum convolvulus</i> )	P
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**Apply 3 to 4 pints per acre<sup>1</sup>**

Greenbriar	( <i>Smilax</i> spp.)	P
Honeysuckle	( <i>Lonicera</i> spp.)	P
Morningglory	( <i>Ipomoea</i> spp.)	A/P
Poison ivy	( <i>Rhus radicans</i> )	P
Redvine	( <i>Brunnichia cirrhosa</i> )	P
Wild rose	( <i>Rosa</i> spp.)	P
including: Multiflora rose	( <i>Rosa multiflora</i> )	P
Macartney rose	( <i>Rosa bracteata</i> )	P

**Apply 4 to 6 pints per acre<sup>1</sup>**

Kudzu <sup>4</sup>	( <i>Pueraria lobata</i> )	P
Trumpet creeper	( <i>Campsis radicans</i> )	P
Virginia creeper	( <i>Parthenocissus quinquefolia</i> )	P
Wild grape	( <i>Vitis</i> spp.)	P

**Weeds Controlled** (continued)

**BRUSH SPECIES**

Apply 4 to 6 pints per acre<sup>1</sup>

Common Name	Species	Growth Habit <sup>2</sup>
American beech	( <i>Fagus grandifolia</i> )	P
Ash	( <i>Fraxinus</i> spp.)	P
Bald cypress	( <i>Taxodium distichum</i> )	P
Bigleaf maple	( <i>Acer macrophyllum</i> )	P
Blackgum	( <i>Nyssa sylvatica</i> )	P
Black locust <sup>7</sup>	( <i>Robinia pseudoacacia</i> )	P
Boxelder	( <i>Acer negundo</i> )	P
Brazilian peppertree	( <i>Schinus terebinthifolius</i> )	P
Cherry	( <i>Prunus</i> spp.)	P
Chinaberry	( <i>Melia azedarach</i> )	P
Chinese tallow tree	( <i>Sapium sebiferum</i> )	P
Dogwood	( <i>Cornus</i> spp.)	P
Elm <sup>8</sup>	( <i>Ulmus</i> spp.)	P
Hawthorn	( <i>Crataegus</i> spp.)	P
Hickory	( <i>Carya</i> spp.)	P
Honeylocust <sup>9</sup>	( <i>Gleditsia triacanthos</i> )	P
Maple	( <i>Acer</i> spp.)	P
Melaleuca	( <i>Melaleuca quinquenervia</i> )	P
Mulberry	( <i>Morus</i> spp.)	P
Oak	( <i>Quercus</i> spp.)	P
Persimmon	( <i>Diospyros virginiana</i> )	P
Poplar	( <i>Populus</i> spp.)	P
Privet	( <i>Ligustrum vulgare</i> )	P
Red alder	( <i>Alnus rubra</i> )	P
Red maple	( <i>Acer rubrum</i> )	P
Russian olive	( <i>Elaeagnus angustifolia</i> )	P
Saltcedar	( <i>Tamarix ramosissima</i> )	P
Sassafras	( <i>Sassafras albidum</i> )	P
Sourwood	( <i>Oxydendrum arboreum</i> )	P
Sumac	( <i>Rhus</i> spp.)	P
Sweetgum	( <i>Liquidambar styraciflua</i> )	P
Willow	( <i>Salix</i> spp.)	P
Yellow poplar	( <i>Liriodendron tulipifera</i> )	P

<sup>1</sup> The higher rates should be used where heavy or well-established infestations occur.

<sup>2</sup> Growth Habit: A = Annual, B = Biennial, P = Perennial

<sup>3</sup> For preemergence control, tank mix with **Pendulum**® herbicide.

<sup>4</sup> Use a minimum of 75 GPA; control of established stands may require repeat applications.

<sup>5</sup> For preemergence control, tank mix with **Karmex**®, **Pendulum**, or diuron.

<sup>6</sup> For best results, early postemergence applications are required.

<sup>7</sup> Tank mix with **Accord**®, **Escort**®, **Garlon**® 3A, **Krenite**®, **Roundup**®, or **Tordon**® K.

<sup>8</sup> Tank mix with **Accord**, **Escort**, or **Roundup**.

<sup>9</sup> Tank mix with **Accord**, **Garlon 3A**, **Roundup**, or **Tordon K**.

<sup>10</sup> Use not permitted in California unless otherwise directed by supplemental labeling.

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BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709



The Chemical Company