

PM 25

241-299

4/9/98

Page 18 19

APR 9 1998

Desire L. Little  
American Cyanamid Company  
P.O. Box 400  
Princeton, NJ 08543-0400

Dear Ms. Little:

Subject: Revised Labeling  
Arsenal Herbicide Applicators Concentrate  
EPA Registration No 241-299  
Your Submission Dated March 24, 1998

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you:

1. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

a The heading "Additional Uses Except California:" is misleading since "forestry site preparation" and "release of conifers" is listed in the previous paragraph. We consider most of the uses in the following paragraph to be part of these sites. Clarify the California Restriction to read similar to the following:

Chopper herbicide is also recommended for control of undesirable vegetation along forest roads, non-irrigation ditchbanks, and the establishment and maintenance of wildlife openings except in the State of California.

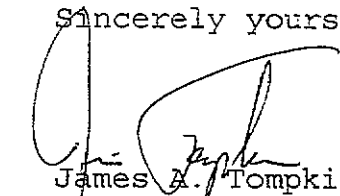
b. The paragraph on the last accepted starting with "Arsenal Herbicide Applicators Concentrate may be applied in forestry sites..., as well as seasonally dry flood deltas" must be separated from other text concerning application sites since it is applicable to all forestry uses.

-2-

2. Submit one (1) copy of your final printed labeling before you release the product for shipment.

A stamped copy of the labeling is enclosed for your records.

Sincerely yours,



James A. Tompkins  
Product Manager (25)  
Herbicide Branch  
Registration Division (7505C)

Enclosure

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**ARSENAL® herbicide  
APPLICATORS CONCENTRATE**

**ACTIVE INGREDIENT:**

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)\* ..... 53.1%

**INERT INGREDIENT** ..... 46.9%

**TOTAL** ..... 100.0%

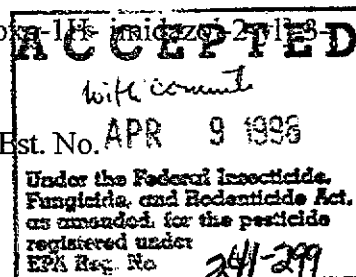
\*Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon.

EPA Reg. No. 241-299

U.S. Patent No. 4,798,619

EPA Est. No. APR 9 1996

**KEEP OUT OF REACH OF CHILDREN  
CAUTION/PRECAUCION**



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.)

**STATEMENT OF PRACTICAL TREATMENT**

- IF INHALED:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
- IF IN EYES:** Flush with plenty of water. Get medical attention if irritation persists.
- IF ON SKIN:** Wash with plenty of soap and water.

In case of emergency endangering life or property involving this product, call collect, day or night, Area Code 973-683-3100.

See next page for Additional Precautionary Statements

AMERICAN CYANAMID COMPANY  
NORTH AMERICA AGRICULTURAL PRODUCTS DIVISION  
SPECIALTY PRODUCTS DEPARTMENT  
ONE CAMPUS DRIVE  
PARSIPPANY, NJ 07054 ©1998

Net Contents:

®Registered Trademark of American Cyanamid Company

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS

#### CAUTION!

Harmful if inhaled. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist.

#### Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- shoes plus socks

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

#### USER SAFETY RECOMMENDATIONS

Users should:

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

### ENVIRONMENTAL HAZARDS

For terrestrial uses, 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 washwaters. This herbicide is phytotoxic at extremely low concentrations. Nontarget plants may be adversely affected from drift.

### PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of ARSENAL herbicide APPLICATORS CONCENTRATE should be mixed, stored, and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

DO NOT mix, store, or apply ARSENAL herbicide APPLICATORS CONCENTRATE or spray solutions of ARSENAL herbicide APPLICATORS CONCENTRATE in unlined steel (except stainless steel) containers or spray tanks.

## 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.

ARSENAL herbicide APPLICATORS CONCENTRATE should be used only in accordance with recommendations on the leaflet label. Keep containers closed to avoid spills and contamination.

ARSENAL herbicide APPLICATORS CONCENTRATE may be applied using helicopters, ground operated sprayers, low-volume hand-operated spray equipment such as back-pack and pump-up sprayers, and tree injection equipment.

Observe all cautions and limitations in the package labels of products used in combination with ARSENAL herbicide APPLICATORS CONCENTRATE.

### 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.

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

- coveralls
- shoes plus socks

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## STORAGE AND DISPOSAL

- PROHIBITIONS:** DO NOT store below 10°F.  
DO NOT contaminate water, food, or feed by storage or disposal.
- PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.
- CONTAINER DISPOSAL:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.
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## IMPORTANT

DO NOT use on food or feed crops. DO NOT use on Christmas trees. DO NOT treat irrigation ditches, or water used for crop irrigation or for domestic uses. Keep from contact with fertilizers, insecticides, fungicides, and seeds to prevent unintentional exposure of desirable vegetation with ARSENAL herbicide APPLICATORS CONCENTRATE. DO NOT apply or drain or flush equipment on or near desirable non-conifer 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 side trim desirable vegetation with this product. Prevent drift of spray to desirable plants.

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

## GENERAL INFORMATION

ARSENAL herbicide APPLICATORS CONCENTRATE is a surfactant free aqueous solution to be mixed in water and generally applied as a post-emergent spray for control of most annual and perennial grasses, broadleaf weeds, vines and brambles, and hardwood brush and trees for forestry site preparation and release of conifers from woody and herbaceous competition. ARSENAL herbicide APPLICATORS CONCENTRATE may be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see pine release). ARSENAL herbicide APPLICATORS CONCENTRATE may also be mixed in water and used for stump and cut-stem treatment for control of unwanted woody vegetation.

### ADDITIONAL USES EXCEPT IN CALIFORNIA:

ARSENAL herbicide APPLICATORS CONCENTRATE is also recommended for control of undesirable vegetation along forest roads, non-irrigation ditchbanks, and the establishment and maintenance of wildlife openings and may be applied in forestry sites (land managed for timber production) on areas defined as puddles, potholes, berms of ditches, drainage ditches, intermittent drainage, intermittently flooded low lying sites, seasonally dry flood plains, and

transitional areas between upland and lowland sites. It is permissible to treat marshes, swamps, and bogs after water has receded, as well as seasonally dry flood deltas.

**SYMPTOMOLOGY:**

ARSENAL herbicide APPLICATORS CONCENTRATE is readily absorbed through foliage and roots and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis first appears in the youngest leaf tissue. In perennials, the herbicide is translocated into the roots, thus preventing most resprouting. Chlorosis and tissue necrosis may not be apparent in some plant species for several weeks after application. Woody plants, brush, and trees normally do not display the full extent of herbicide control until several months following application.

**MIXING AND APPLICATION INSTRUCTIONS****HELICOPTER SPRAY EQUIPMENT:**

Thoroughly mix the recommended amount of ARSENAL herbicide APPLICATORS CONCENTRATE in 5 to 30 gallons of water per acre and uniformly apply with properly calibrated aerial equipment. A suitable nonionic surfactant may be added to the spray solution to enhance control of undesirable vegetation. All precautions should be taken to minimize or eliminate spray drift. Applications should not be made under windy or gusty conditions. The use of controlled droplet booms and nozzle configurations is recommended. A drift control agent may be added at the recommended label rate except when applying with a MICROFOIL<sup>1</sup> boom, THRU- VALVE BOOM<sup>2</sup> or other similar equipment. A foam reducing agent may be added at the recommended label rate, if needed.

**IMPORTANT:** DO NOT make applications by fixed wing aircraft. Maintain adequate buffer zones. Thoroughly clean application and mixing equipment, including landing gear, immediately after use. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part.

<sup>1</sup>Trademark of Rhone Poulenc Ag. Company

<sup>2</sup>Trademark of Waldrum Specialties

**GROUND OPERATED SPRAY EQUIPMENT:**

Thoroughly mix and apply the recommended amount of ARSENAL herbicide APPLICATORS CONCENTRATE in 5 to 100 gallons of water per acre. A suitable nonionic surfactant may be added to the spray solution to enhance control of undesirable vegetation. A drift control agent and a foam reducing agent may be added at the recommended label rates, if needed. If desired, a spray pattern indicator may be added at the recommended label rate.

For best results, uniformly cover the foliage of the vegetation to be controlled with the spray solution.

**IMPORTANT:** DO NOT spray under windy or gusty conditions. Maintain adequate buffer zones. HIGH VOLUME (75 to 100 gallons per acre) APPLICATIONS ARE RECOMMENDED FOR KUDZU WEED CONTROL PROGRAMS. Clean application and mixing equipment after using this product by thoroughly flushing with water.

#### **DIRECTED OR SPOT SPRAY EQUIPMENT:**

When making directed or spot spray applications with helicopter or ground spray equipment, or low-volume hand-operated spray equipment, thoroughly mix a solution of 1 to 5 percent by volume of ARSENAL herbicide APPLICATORS CONCENTRATE and a minimum of 1/4 percent by volume nonionic surfactant in water.

To mix the spray solution, add the volume of ARSENAL herbicide APPLICATORS CONCENTRATE and nonionic surfactant indicated in the table below to the desired amount of water.

#### **SPRAY SOLUTION MIXING GUIDE**

<u>SOLUTION VOLUME</u>	<u>ARSENAL herbicide APPLICATORS CONCENTRATION (%)</u>			<u>SURFACTANT</u>
	1	2.5	5	
1 gallon	1-1/3 oz.	3-1/3 oz.	6-2/3 oz.	1/3 oz.
5 gallons	6-2/3 oz.	1 pint	2 pints	1-2/3 oz.
10 gallons	13-1/3 oz.	2 pints	4 pints	3-1/3 oz.
25 gallons	2 pints	5 pints	10 pints	8 oz.
100 gallons	1 gal.	2.5 gal.	5 gal.	2 pints

2 tablespoons = 1 fluid ounce

For best results, uniformly cover the foliage of the vegetation to be controlled with the spray solution. Avoid making applications directly to desirable conifers. BIGLEAF MAPLE REQUIRES AT LEAST A 2.5% SPRAY SOLUTION CONCENTRATION.

**IMPORTANT:** DO NOT over apply causing runoff from the treated foliage. Avoid direct application to desired plant species as injury may occur. DO NOT exceed recommended dosage rate per acre.



## STUMP AND CUT STEM TREATMENTS

ARSENAL herbicide APPLICATORS CONCENTRATE may be used to control undesirable woody vegetation in forest management by applying a solution of the herbicide in water to the cambium area of freshly-cut stump surfaces or to 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. Tree injection and cut stem treatments are most effective in late summer and early fall.

### MIXING

ARSENAL herbicide APPLICATORS CONCENTRATE 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.

### APPLICATION WITH DILUTE SOLUTIONS

To prepare a dilute solution, mix 6 fluid ounces of ARSENAL herbicide APPLICATORS CONCENTRATE with one gallon of water.

For cut stump treatments: Spray or brush the solution onto the cambium area of the freshly cut stump surface. Insure 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 one inch intervals between cut edges. Insure 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 two inch intervals between cut edges. Spray or brush the solution into each cut until thoroughly wet.

### APPLICATION WITH CONCENTRATED SOLUTIONS

To prepare a concentrated solution, use undiluted product or mix with up to 75% water, by volume.

For tree injection treatments: Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least one injection cut for every three inches of diameter at breast height (dbh) on the target tree. For example, a three inch dbh tree will receive 1 injection cut and a six inch dbh tree will receive 2 injection cuts. On trees requiring more than one 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 one cut for every three inches of diameter at breast height (dbh) on the target tree. For example, a three inch dbh tree will receive 1 cut and a six inch dbh tree will receive 2 cuts. Spray or brush the solution into each cut until thoroughly wet.

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

### SITE PREPARATION TREATMENTS

ARSENAL herbicide APPLICATORS CONCENTRATE may be used to control labeled grasses, broadleaf weeds, vines and brambles, and woody brush and trees on forest sites in advance of regeneration for the following conifer crop species:

<u>Crop Species</u>	<u>Rate (oz/A)</u>
Loblolly Pine ( <u>Pinus taeda</u> )	24-40
Loblolly X Pitch Hybrid	24-40
Longleaf Pine ( <u>Pinus palustris</u> )	24-40
Shortleaf Pine ( <u>Pinus echinata</u> )	24-40
Virginia Pine ( <u>Pinus virginiana</u> )	24-40
Slash Pine ( <u>Pinus elliotii</u> )	20-32
Black Spruce ( <u>Pinus mariana</u> )	12-16
Jack Pine ( <u>Pinus banksiana</u> )	12-16
Pitch Pine ( <u>Pinus rigida</u> )	12-16
Red Spruce ( <u>Picea rubens</u> )	12-16
White Pine ( <u>Pinus strobus</u> )	12-16
White Spruce ( <u>Picea glauca</u> )	12-16
Douglas-Fir ( <u>Pseudotsuga menziesii</u> )	12-16
Lodgepole Pine ( <u>Pinus contorta</u> )	12-16
Ponderosa Pine ( <u>Pinus ponderosa</u> )	12-16

Use the recommended rate of ARSENAL herbicide APPLICATORS CONCENTRATE per acre applied as a broadcast foliar spray for long-term control of labeled woody plants and residual control of herbaceous weeds. Within 4 to 6 weeks of treatment, grasses and other herbaceous weeds will be controlled and may provide fuel to facilitate a site preparation burn, if desired, to control conifers or other species tolerant to the herbicide.

Apply the recommended rate of ARSENAL herbicide APPLICATORS CONCENTRATE per acre in 10 to 20 gallons total spray solution for helicopter applications or 5 to 40 gallons total spray solution for mechanical ground spray applications. Use a minimum of 1/2 percent by volume nonionic surfactant. Use the higher label rates of ARSENAL herbicide APPLICATORS CONCENTRATE and higher spray volumes when controlling particularly dense or multi-layered canopies of hardwood stands, or difficult to control species.

Tank mixes may be necessary for chemical control of conifers and other species tolerant to ARSENAL herbicide APPLICATORS CONCENTRATE in certain cases. Observe all precautions and restrictions on the product labels. Always follow the most restrictive label. Combinations with other products labeled for forest site preparation may kill certain plants such as legumes and blackberry which are desirable for wildlife habitat.

Where quick initial brown out (deadening of foliage) is desired for burning, apply a tank mixture of 16 to 32 oz. ARSENAL herbicide APPLICATORS CONCENTRATE with 16 to 64 oz. Accord<sup>3</sup> or 16 to 48 oz. Garlon 4<sup>4</sup> per acre. For control of seedling pines, apply 16 to 32 oz. ARSENAL herbicide APPLICATORS CONCENTRATE with 3 to 4 quarts Accord. For site preparation, rates less than 24 oz. ARSENAL herbicide APPLICATORS CONCENTRATE will provide suppression of hardwood brush and trees, and some resprouting may occur.

<sup>3</sup>Trademark of Monsanto Company

<sup>4</sup>Trademark of Dow-Elanco Corp.

Do not plant seedlings of northern or western conifer species, other than Douglas fir, on sites that have been broadcast treated with ARSENAL herbicide APPLICATORS CONCENTRATE or into the treated zone of spot or banded applications for three months following application or injury may occur. Douglas fir seedlings may be planted two months after site preparation treatment with ARSENAL herbicide APPLICATORS CONCENTRATE.

### HERBACEOUS WEED CONTROL

Use ARSENAL herbicide APPLICATORS CONCENTRATE for selective weeding in the following conifers:

Crop Species	Rate (fl.oz./A)
Loblolly Pine ( <u>Pinus taeda</u> )	6 - 10
Loblolly X Pitch Hybrid	6 - 10
Virginia Pine ( <u>Pinus virginiana</u> )	6 - 10
Longleaf Pine ( <u>Pinus palustris</u> ) <sup>1</sup>	4 - 6
Slash Pine ( <u>Pinus elliotii</u> ) <sup>1</sup>	4 - 8

<sup>1</sup>Use of surfactant is not recommended.

ARSENAL herbicide APPLICATORS CONCENTRATE may be applied as a broadcast treatment, banded over tree rows, or as a directed spray for release of young conifers from herbaceous weeds. To prevent possibility of conifer injury, do not apply ARSENAL herbicide APPLICATORS CONCENTRATE when conifers are under stress from drought, diseases, animal or winter injury, planting shock, or other stresses reducing conifer vigor. Broadcast applications may be made by helicopter or ground sprayer. For best results, applications should be made to newly emerged weeds. For difficult to control weeds, use the higher labeled rates. Where herbaceous weeds have overtopped conifer seedlings, a nonionic surfactant may be added to improve weed control (except for slash and longleaf pine), at a rate not to exceed 1/4 percent

of spray solution volume. Some minor conifer growth inhibition may be observed when herbaceous weed control treatments are made during periods of active conifer growth.

ARSENAL herbicide APPLICATORS CONCENTRATE may also be applied using backpack or hand-held sprayers to control herbaceous weeds around individual conifer seedlings. Mix 0.4 to 0.6 oz. ARSENAL herbicide APPLICATORS CONCENTRATE and 0.2 oz. nonionic surfactant per gallon of water. Direct the spray to the weeds and minimize the amount applied to conifer foliage for best conifer tolerance. Ensure that maximum labeled rates per acre listed for crop species above are not exceeded.

ARSENAL herbicide APPLICATORS CONCENTRATE may be tank mixed with Oust<sup>5</sup> to broaden the spectrum of weeds controlled. For loblolly pine only, apply 4 to 6 oz. ARSENAL herbicide APPLICATORS CONCENTRATE plus 1-2 oz. Oust (product) per acre.

<sup>5</sup>Trademark of E.I. duPont de Nemours & Company

### CONIFER RELEASE TREATMENTS

ARSENAL herbicide APPLICATORS CONCENTRATE may be applied as a broadcast or directed spray application for suppression of labeled brush, tree, and herbaceous weed species. Directed spray applications may be made with low-volume applications in conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that maximum labeled rates per acre listed for crop species below are not exceeded.

Use broadcast applications of ARSENAL herbicide APPLICATORS CONCENTRATE for release of the following conifers from hardwood competition:

Crop Species	Rate (fl. oz./Acre)
Loblolly Pine ( <u>Pinus taeda</u> ) <sup>3</sup>	12 - 20
Loblolly X Pitch Hybrid <sup>3</sup>	12 - 20
Virginia Pine ( <u>Pinus virginiana</u> ) <sup>3</sup>	12 - 20
Longleaf Pine ( <u>Pinus palustris</u> )	12 - 16
Pitch Pine ( <u>Pinus rigida</u> )	12 - 16
Shortleaf Pine ( <u>Pinus echinata</u> )	12 - 16
Slash Pine ( <u>Pinus elliottii</u> )	12 - 16
White Pine ( <u>Pinus strobus</u> ) <sup>1</sup>	8 - 16
Douglas Fir ( <u>Pseudotsuga menziesii</u> ) <sup>2</sup>	4 - 8

13 9 19

Crop Species	Rate (fl. oz./A)
Lodgepole Pine ( <u>Pinus contorta</u> ) <sup>2</sup>	8 - 12
Ponderosa Pine ( <u>Pinus ponderosa</u> ) <sup>2</sup>	4 - 8
Black Spruce ( <u>Picea mariana</u> ) <sup>2</sup>	6 - 12
Jack Pine ( <u>Pinus banksiana</u> ) <sup>2</sup>	6 - 12
Red Spruce ( <u>Picea rubens</u> ) <sup>2</sup>	6 - 12
White Spruce ( <u>Picea glauca</u> ) <sup>2</sup>	6 - 12

- <sup>1</sup> DO NOT make applications to white pine stands younger than three years old. To minimize potential white pine injury, release treatments should not be made prior to July 15.
- <sup>2</sup> Applications should be made after formation of final conifer resting buds in the fall or height growth inhibition may occur.
- <sup>3</sup> Mid-rotation release: For broadcast applications below the pine canopy in established stands of loblolly pine, loblolly X pitch hybrid, and Virginia pine use 16-32 oz product per acre. For mid-rotation release of other species use rates listed above.

For slash pine and longleaf pine, broadcast release treatments over the top of pines for the purpose of woody plant control must be made after August 15 and only in stands 2 through 5 years old. For applications over the top of slash pine and longleaf pine, do not add surfactant and use lower labeled rates on sandy soils.

Apply the recommended rate of ARSENAL herbicide APPLICATORS CONCENTRATE per acre when making broadcast applications with helicopter or ground spray equipment. Refer to mixing and application instructions for proper spray volumes. A nonionic surfactant may be added at no more than 1/4 percent by volume. Use the higher label rates of ARSENAL herbicide APPLICATORS CONCENTRATE when controlling particularly dense stands or difficult to control species.

Some minor conifer growth inhibition may be observed when release treatments are made during periods of active conifer growth. To minimize potential conifer height growth inhibition, do not make applications to conifer stands, except loblolly pine, before the end of the second growing season. To minimize potential conifer height growth inhibition, broadcast release treatments may be made late in the growing season. To prevent possibility of conifer injury, do not apply ARSENAL herbicide APPLICATORS CONCENTRATE when conifers are under stress from drought, diseases, animal or winter injury, or other stresses reducing conifer vigor.

ARSENAL herbicide APPLICATORS CONCENTRATE may be used to release loblolly pine seedlings during the first growing season following planting or for one-year-old natural loblolly pine regeneration. For one-year-old loblolly pine release, apply 12-16 oz./A ARSENAL herbicide APPLICATORS CONCENTRATE after July 15. The use of rates below 16 oz./A is intended for hardwood growth suppression and some hardwood resprouting should be expected.

Use ARSENAL herbicide APPLICATORS CONCENTRATE for spot treatment of undesirable hardwood vegetation:

ARSENAL herbicide APPLICATORS CONCENTRATE may be used as a directed foliar or injection application to control undesirable brush and hardwoods in the management of stands of all ages for the conifer species listed in the broadcast application section above. Refer to mixing and application instructions for proper use rates, equipment, and application techniques. Ensure that the maximum labeled rates per acre listed for crop species are not exceeded.

Avoid direct application to desired plant species as injury may occur. Injury may occur to non-target or desirable hardwoods or conifers if they extend from the same root system or their root systems are grafted to those of the treated tree or if their roots extend into the treated zone.

### WEEDS CONTROLLED

ARSENAL herbicide APPLICATORS CONCENTRATE will provide postemergence control and some residual control of the following target vegetation species. Degree of control is both species and rate dependent. ARSENAL herbicide APPLICATORS CONCENTRATE should be used only in accordance with the recommendations on this label.

### GRASSES

The species of annual and perennial grasses controlled by ARSENAL herbicide APPLICATORS CONCENTRATE include the following:

- Annual bluegrass (Poa annua)
- Bahiagrass (Paspalum notatum)
- Barnyardgrass (Echinochloa crus-galli)
- Beardgrass (Andropogon spp.)
- Bermudagrass (Cynodon dactylon)<sup>1</sup>
- Big bluestem (Andropogon gerardii)
- Broadleaf signalgrass (Brachiaria platyphylla)
- Canada bluegrass (Poa compressa)
- Cattail (Typha spp.)
- Cheat (Bromus secalinus)
- Cogongrass (Imperata cylindrica)<sup>2</sup>
- Crabgrass (Digitaria spp.)
- Crowfootgrass (Dactyloctenium aegyptium)
- Dallisgrass (Paspalum dilatatum)
- Downy brome (Bromus tectorum)
- Fall panicum (Panicum dichotomiflorum)
- Feathertop (Pennisetum villosum)
- Fescue (Festuca spp.)
- Foxtail (Setaria spp.)
- Giant reed (Arundo donax)
- Goosegrass (Eleusine indica)
- Guineagrass (Panicum maximum)

Italian ryegrass (Lolium multiflorum)  
 Itchgrass (Rottboellia exaltata)  
 Johnsongrass (Sorghum halepense)<sup>1</sup>  
 Junglerice (Echinochloa colonum)  
 Kentucky bluegrass (Poa pratensis)  
 Lovegrass (Eragrostis spp.)<sup>1</sup>  
 Orchardgrass (Dactylis glomerata)  
 Panicum spp  
 Paragrass (Brachiaria mutica)  
 Phragmites (Phragmites australis)  
 Prairie cordgrass (Spartina pectinata)  
 Prairie threeawn (Aristida oligantha)  
 Quackgrass (Agropyron repens)  
 Reed canary grass (Phalaris arundinacea)  
 Saltgrass (Distichlis stricta)  
 Sand dropseed (Sporobolus cryptandrus)  
 Sandbur (Cenchrus spp.)  
 Signalgrass (Brachiaria platyphylla)  
 Smooth brome (Bromus inermis)  
 Sprangletop (Leptochloa spp.)  
 Timothy (Phleum pratense)  
 Torpedograss (Panicum repens)  
 Vaseygrass (Paspalum urvillei)  
 Wild barley (Hordeum spp.)  
 Wild oats (Avena fatua)  
 Wirestem muhly (Muhlenbergia frondosa)  
 Witchgrass (Panicum capillare)  
 Woolly cupgrass (Eriochloa villosa)

<sup>1</sup>Use higher labeled rates.

<sup>2</sup>Use minimum of 12 oz per acre.

## BROADLEAF WEEDS

The species of annual and perennial broadleaf weeds controlled by ARSENAL herbicide APPLICATORS CONCENTRATE include the following:

Arrowwood (Pluchea sericea)  
 Broom snakeweed (Gutierrezia sarothrae)  
 Bull thistle (Cirsium vulgare)  
 Burclover (Medicago spp.)  
 Burdock (Arctium spp.)  
 Camphorweed (Heterotheca subaxillaris)  
 Canada thistle (Cirsium arvense)  
 Carolina geranium (Geranium carolinianum)  
 Carpetweed (Mullugo verticillata)  
 Chickweed, mouseear (Cerastium vulgatum)

Clover (Trifolium spp.)  
 Cocklebur (Xanthium strumarium)  
 Common chickweed (Stellaria media)  
 Common ragweed (Ambrosia artemisiifolia)  
 Cudweed (Gnaphalium spp.)  
 Dandelion (Taraxacum officinale)  
 Desert camelthorn (Alhagi pseudalhagi)  
 Diffuse knapweed (Centaurea diffusa)  
 Dock (Rumex spp.)  
 Dogfennel (Eupatorium capillifolium)  
 Fiddleneck (Amsinckia intermedia)  
 Filaree (Erodium spp.)  
 Fleabane (Erigeron spp.)  
 Giant ragweed (Ambrosia trifida)  
 Goldenrod (Solidago spp.)  
 Gray rabbitbrush (Chrysothamnus nauseosus)  
 Henbit (Lamium aplexicaule)  
 Hoary vervain (Verbena stricta)  
 Horseweed (Conyza canadensis)  
 Indian mustard (Brassica juncea)  
 Japanese bamboo/knotweed (Polygonum cuspidatum)  
 Knotweed, prostrate (Polygonum aviculare)  
 Kochia (Kochia scoparia)  
 Lambsquarters (Chenopodium album)  
 Little mallow (Malva parviflora)  
 Milkweed (Asclepias spp.)  
 Miners lettuce (Montia perfoliata)  
 Mullein (Verbascum spp.)  
 Nettleleaf goosefoot (Chenopodium murale)  
 Oxeye daisy (Chrysanthemum leucanthemum)  
 Pepperweed (Lepidium spp.)  
 Pigweed (Amaranthus spp.)  
 Plantain (Plantago spp.)  
 Pokeweed (Phytolacca americana)  
 Primrose (Oenothera kunthiana)  
 Puncturevine (Tribulus terrestris)  
 Purple loosestrife (Lythrum salicaria)  
 Purslane (Portulaca spp.)  
 Pusley, Florida (Richardia scabra)  
 Rocket, London (Sisymbrium irio)  
 Rush skeletonweed (Chondrilla juncea)  
 Russian knapweed (Centaurea repens)  
 Russian thistle (Salsola kali)  
 Saltbush (Atriplex spp.)  
 Shepherd's purse (Capsella bursa-pastoris)  
 Silverleaf nightshade (Solanum elaeagnifolium)  
 Smartweed (Polygonum spp.)



Sorrell (Rumex spp.)  
 Sowthistle (Sonchus spp.)  
 Spurge, annual (Euphorbia spp.)  
 Stinging nettle (Urtica dioica)  
 Sunflower (Helianthus spp.)  
 Sweet clover (Melilotus spp.)  
 Tansymustard (Descurainia pinnata)  
 Texas thistle (Cirsium texanum)  
 Velvetleaf (Abutilon theophrasti)  
 Western ragweed (Ambrosia psilostachya)  
 Wild carrot (Daucus carota)  
 Wild lettuce (Lactuca spp.)  
 Wild parsnip (Pastinaca sativa)  
 Wild turnip (Brassica campestris)  
 Woollyleaf bursage (Ambrosia grayi)  
 Yellow starthistle (Centaurea solstitialis)  
 Yellow woodsorrel (Oxalis stricta)

### VINES AND BRAMBLES

The species of vines and brambles controlled by ARSENAL herbicide APPLICATORS CONCENTRATE include the following:

Field bindweed (Convolvulus arvensis)  
 Greenbriar (Smilax spp.)  
 Hedge bindweed (Calystegia sepium)  
 Honeysuckle (Lonicera spp.)  
 Kudzu (Pueraria lobata)<sup>1,2</sup>  
 Morningglory (Ipomoea spp.)  
 Poison ivy (Rhus radicans)  
 Redvine (Brunnichia cirrhosa)  
 Trumpet creeper (Campsis radicans)  
 Virginia creeper (Parthenocissus quinquefolia)  
 Wild buckwheat (Polygonum convolvulus)  
 Wild grape (Vitis spp.)  
 Wild rose (Rosa spp.)<sup>1</sup>  
     Including: Multiflora rose (Rosa multiflora)  
             Macartney rose (Rosa bracteata)

<sup>1</sup>Use higher labeled rates.

<sup>2</sup>Use a minimum of 75 GPA - Control of established stands may require multiple applications.

## WOODY BRUSH AND TREES

The species of woody brush and trees controlled by ARSENAL herbicide APPLICATORS CONCENTRATE include the following:

Alder (Alnus spp.)  
 American beech (Fagus grandifolia)  
 Ash (Fraxinus spp.)<sup>1</sup>  
 Aspen (Populus spp.)  
 Autumn olive (Elaeagnus umbellata)  
 Bald cypress (Taxodium distichum)  
 Bigleaf maple (Acer macrophyllum)  
 Birch (Betula spp.)<sup>1</sup>  
 Black oak (Quercus kelloggii)  
 Blackgum (Nyssa sylvatica)<sup>2</sup>  
 Boxelder (Acer negundo)  
 Brazilian peppertree (Schinus terebinthifolius)  
 Ceanothis (Ceanothis spp.)  
 Cherry (Prunus spp.)<sup>1,2</sup>  
 Chinaberry (Melia azedarach)  
 Chinese tallow-tree (Sapium sebiferum)  
 Chinquapin (Castanopsis chrysophylla)  
 Cottonwood (Populus trichocarpa and Populus deltoides)  
 Cypress (Taxodium spp.)  
 Dogwood (Cornus spp.)<sup>1</sup>  
 Eucalyptus (Eucalyptus spp.)  
 Hawthorn (Crataegus spp.)  
 Hickory (Carya spp.)<sup>1</sup>  
 Huckleberry (Gaylussacia spp.)  
Lyonia spp  
     Including: Fetterbush (Lyonia lucida)  
             Staggerbush (Lyonia mariana)  
 Madrone (Arbutus menziesii)  
 Maple (Acer spp.)  
 Melaleuca (Melaleuca quinquenervia)  
 Mulberry (Morus spp.)<sup>1,3</sup>  
 Oak (Quercus spp.)  
 Persimmon (Diospyros virginiana)<sup>2</sup>  
 Poison oak (Rhus diversiloba)  
 Poplar (Populus spp.)  
 Privet (Ligustrum vulgare)  
 Red alder (Alnus rubra)  
 Red maple (Acer rubrum)  
 Saltcedar (Tamarix pentandra)  
 Sassafras (Sassafras albidum)  
 Sourwood (Oxydendrum arboreum)<sup>2</sup>

Sumac (Rhus spp.)  
 Sweetgum (Liquidambar styraciflua)  
 Sycamore (Platanus occidentalis)  
 Tanoak (Lithocarpus densiflorus)<sup>1</sup>  
 TiTi (Cyrilla racemiflora)<sup>1</sup>  
 Tree of heaven (Ailanthus altissima)  
Vaccinium spp.

Including: Blueberry (Vaccinium spp.)  
 Sparkleberry (Vaccinium arboreum)

Willow (Salix spp.)  
 Yellow-poplar (Liriodendron tulipifera)

- <sup>1</sup> Use higher labeled rates.
- <sup>2</sup> Best control with applications prior to formation of fall leaf color.
- <sup>3</sup> The degree of control may be species dependent.

### DISCLAIMER

The label instructions for the use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the use or application of the product contrary to label instructions, all of which are beyond the control of American Cyanamid Company. All such risks shall be assumed by the user.

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Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or values or any other special or indirect damages.

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8078