

ARSENAL<sup>(R)</sup> herbicide

ACTIVE INGREDIENT:

Isopropylamine salt of Imazapyr (2-4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl)-3-pyridinecarboxylic acid)\*.....27.6%

~~INERT INGREDIENT.....72.4%~~

TOTAL.....100.0%

\*Equivalent to 22.6% 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. 241-273

PA Est. No. 5905-AR-1

**ACCEPTED**

JUL 21 1987

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 241-273

KEEP OUT OF REACH OF CHILDREN  
CAUTION!

See side Panel for Additional Precautionary Statements

PRECAUCION

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

In case of emergency endangering life or property involving this product, call collect, day or night, Area Code 201-835-3100.

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AMERICAN CYANAMID COMPANY  
AGRICULTURAL DIVISION  
VPC VENTURES  
WAYNE, NJ 07470

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## PRECAUTIONARY STATEMENTS

## HAZARDS TO HUMANS

## CAUTION!

Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

## FIRST AID

~~IF ON SKIN: Wash with plenty of soap and water.~~

IF ON EYES: Flush with plenty of water. Get medical attention if irritation persists.

## PHYSICAL AND CHEMICAL HAZARDS

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

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

## ENVIRONMENTAL HAZARDS

DO NOT apply directly to any body of water. DO NOT contaminate water by cleaning of equipment or disposal of waste.

## STORAGE AND DISPOSAL

PROHIBITIONS: DO NOT store below 10 degrees 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 by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## IMPORTANT

DO NOT use on food or feed crops. DO NOT apply on irrigation ditches when water is present. Keep from contact with fertilizers, insecticides, fungicides and seeds. DO NOT apply or 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. DO NOT side trim desirable vegetation with this product. Prevent drift of spray to desirable plants. DO NOT USE in California.

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

GENERAL INFORMATION

ARSENAL herbicide is an aqueous solution to be mixed in water and applied as a spray for control of most annual and perennial grasses and broadleaf weeds on noncropland areas.

ARSENAL may be applied either preemergence or postemergence to the weeds; however, postemergence application is the method of choice in most situations, particularly for control of perennials. For maximum activity, weeds should be growing vigorously at the time of postemergence applications. The preemergence activity of ARSENAL will provide residual control of most weed species following a postemergence application.

ARSENAL 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 appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into and kills underground storage organs, thus preventing regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until two weeks after application. Complete kill of plants may not occur for several weeks.

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.

American Cyanamid Company warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risks referred to above.

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.

American Cyanamid Company makes no other express or implied warranty, including other express or implied warranty of FITNESS or of MERCHANTABILITY.

DIRECTIONS FOR USE



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

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

A postemergence application of ARSENAL is recommended for control of most annual and perennial grasses and broadleaf weeds on noncropland areas such as railroad, utility and pipeline rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, non-irrigation ditch banks and other similar areas.

APPLICATION EQUIPMENT AND TECHNIQUES

ARSENAL may be applied with the following application equipment:

Aerial - fixed wing and helicopter.

Boom - conventional boom mounted, manifold mounted, and off-center nozzles.

Low-volume hand-held spray equipment-backpack, knapsack and other pump-up type pressure sprayers and backpack mist blowers used to direct application to weed foliage.

High-volume spray equipment - pressure handguns and vehicle mounted high-volume directed spray equipment.

AERIAL EQUIPMENT

Uniformly apply the recommended amount of ARSENAL with properly calibrated aerial equipment in 5 to 30 gallons of water per acre. All precautions should be taken to minimize or eliminate spray drift. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a MICROFOIL boom, THRU-VALVE boom or raindrop nozzels, must be used. Applications should not be made under gusty conditions or when wind velocity exceeds 5 mph. Except when applying with a MICROFOIL boom, a drift control agent may be added at the recommended label rate. A foam reducing agent may be added at the recommended label rate, if needed.

IMPORTANT: DO NOT make applications by fixed wing aircraft unless appropriate buffer zones can be maintained to insure that drift does not occur off the target area. Thoroughly clean application 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.

BOOM EQUIPMENT

Mix the recommended amount of ARSENAL in 15 to 60 gallons of water per acre



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in the spray tank with the agitator running. A foam reducing agent may be added at the recommended label rate, if needed. If desired, a spray pattern indicator may be added at the recommended label rate. Check for even distribution in spray pattern.

IMPORTANT: To minimize drift, select proper nozzles to avoid spraying a fine mist, DO NOT exceed spray pressure of 50 psi, and DO NOT spray under windy or gusty conditions.

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

LOW-VOLUME HAND-HELD SPRAY EQUIPMENT

Thoroughly mix a 1/2 to 1 percent solution of ARSENAL in water. To determine the proper percent solution of ARSENAL to use, see the "WEEDS CONTROLLED" section of this label and the "PERCENT SOLUTION RATE GUIDE" below.

PERCENT SOLUTION RATE GUIDE

ARSENAL RATE PER ACRE	PERCENT SOLUTION TO MIX
1 - 3 pints	1/2 %
3 - 4 pints	3/4 %
4 - 6 pints	1 %

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

DO NOT over apply causing runoff from the treated foliage.

To mix the spray solution, add the volume of ARSENAL indicated in the table below to the desired amount of water.

SPRAY SOLUTION MIXING GUIDE

SOLUTION VOLUME	AMOUNT OF ARSENAL TO USE		
	1/2 %	3/4 %	1 %
1 gallon	2/3 oz.	1 oz.	1-1/3 oz.
5 gallons	3-1/3 oz.	5 oz.	6-1/2 oz.
10 gallons	6-2/3 oz.	10 oz.	13 oz.

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25 gallons      1 pint      1-1/2 pints      2 pints

2 tablespoons = 1 ounce

It is not necessary to add additional surfactants or wetting agents.

IMPORTANT: DO NOT side-trim desirable vegetation with this product. Clean application equipment after using this product by thoroughly flushing with water.

~~HIGH VOLUME SPRAY EQUIPMENT~~

ARSENAL may be applied using high-volume spray equipment. For best results, apply ARSENAL using the least amount of water practical to obtain uniform coverage of the vegetation foliage. Using excessive spray volumes which cause runoff from the plant foliage may result in reduced performance.

When using spray volumes greater than 60 gallons per acre, additional nonionic surfactant such as Surfactant WK\* or Ortho\*\* X-77 must then be added at the rate of 1 quart per 100 gallons of spray solution to provide optimum wetting and/or contact activity. A foam reducing agent may be added at the recommended label rate, if needed. If desired, a spray pattern indicator may be added at the recommended label rate.

To mix the spray solution, determine the proper ARSENAL pints per acre rate from the "WEEDS CONTROLLED" section of this label and mix according to the table below.

SPRAY SOLUTION MIXING GUIDE

SPRAY VOLUME (GAL/ACRE)	PINTS ARSENAL TO MIX PER 100 GALLONS WATER			
	3 PTS/ACRE	4 PTS/ACRE	5 PTS/ACRE	6 PTS/ACRE
50	6	8	10	12
100	3	4	5	6
150	2	2-3/4	3-1/4	4

IMPORTANT: DO NOT side-trim desirable vegetation with this product. Clean application equipment after using this product by thoroughly flushing with water.

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\* Registered trademark of E.I. duPont de Nemours and Company.

\*\* Registered trademark of Chevron Chemical Company.

#### WEEDS CONTROLLED

ARSENAL herbicide will provide postemergence control with residual control of the following target vegetation species at the rates listed. ARSENAL herbicide should be used only in accordance with the recommendation on this label and the leaflet label.

#### GRASSES

Apply 2-3 pints per acre\*

- Annual bluegrass (*Poa annua*)
- Broadleaf signalgrass (*Brachiaria platphylla*)
- Canada bluegrass (*Poa compressa*)
- Downy brome (*Bromus tectorum*)
- Fescue (*Festuca* spp.)
- Foxtail (*Setaria* spp.)
- Italian ryegrass (*Lolium multiflorum*)
- Johnsongrass (*Sorghum halepense*)
- Kentucky bluegrass (*Poa pratensis*)
- Lovegrass (*Eragrostis* spp.)
- Orchardgrass (*Dactylis glomerata*)
- Paragrass (*Brachiaria mutica*)
- Quackgrass (*Agropyron repens*)
- Saltgrass (*Distichlis stricta*)
- Sandbur (*Cenchrus* spp.)
- Smooth brome (*Bromus inermis*)
- Vaseygrass (*Paspalum urvillei*)
- Wild oats (*Avena fatua*)
- Witchgrass (*Panicum capillare*)

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Apply 3-4 pints per acre\*

Beardgrass (*Andropogon* spp.)

Cheat (*Bromus secalinus*)

Crabgrass (*Digitaria* spp.)

~~Fail panicum (*Panicum dichotomiflorum*)~~

Goosegrass (*Eleusine indica*)

Prairie threeawn (*Aristida oligantha*)

Reed canary grass (*Phalaris arundinacea*)

Torpedograss (*Panicum repens*)

Wild barley (*Hordeum* spp.)

Apply 4-6 pints per acre\*

Bahiagrass (*Paspalum notatum*)

Bermudagrass (*Cynodon dactylon*)

Big bluestem (*Andropogon gerardi*)

Cattail (*Typha* spp.)

Dallisgrass (*Paspalum dilatatum*)

Feathertop (*Pennisetum villosum*)

Guineagrass (*Panicum maximum*)

Phragmites (*Phragmites australis*)

Prairie cordgrass (*Spartina pectinata*)

Sand dropseed (*Sporobolus cryptandrus*)

Timothy (*Phleum pratense*)

Wirestem muhly (*Muhlenbergia frondosa*)

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BROADLEAF WEEDS

Apply 2-3 pints per acre\*

- Burdock (*Arctium* spp.)
- Camphorweed (*Heterotheca subaxillaris*)
- ~~Carpetweed (*Mullugo verticillata*)~~
- Carolina geranium (*Geranium carolinianum*)
- Clover (*Trifolium* spp.)
- Common chickweed (*Stellaria media*)
- Common ragweed (*Ambrosia artemisiifolia*)
- Dandelion (*Taraxacum officinale*)
- Dogfennel (*Eupatorium capillifolium*)
- Filaree (*Erodium* spp.)
- Fleabane (*Erigeron* spp.)
- Hoary vervain (*Verbena stricta*)
- Horseweed (*Conyza canadensis*)
- Indian mustard (*Brassica juncea*)
- Kochia (*Kochia scoparia*)
- Lambsquarters (*Chenopodium album*)
- Lespedeza (*Lespedeza* spp.)
- Miners lettuce (*Montia perfoliata*)
- Mullein (*Verbascum* spp.)
- Nettleleaf goosefoot (*Chenopodium murale*)
- Oxeye daisy (*Chrysanthemum leucanthemum*)
- Pepperweed (*Lepidium* spp.)
- Pigweed (*Amaranthus* spp.)

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- Plantain (*Plantago* spp.)
- Smartweed (*Polygonum* spp.)
- Sorrell (*Rumex* spp.)
- Sunflower (*Helianthus* spp.)
- Sweet clover (*Melilotus* spp.)
- Tansymustard (*Descurainia pinnata*)

~~Western ragweed (*Ambrosia psilostachya*)~~

- Wild carrot (*Daucus carota*)
- Wild lettuce (*Lactuca* spp.)
- Wild parsnip (*Pastinaca sativa*)
- Wild turnip (*Brassica campestris*)
- Wollyleaf bursage (*Ambrosia grayi*)
- Yellow woodsorrel (*Oxalis stricta*)

Apply 3-4 pints per acre\*

- Bull thistle (*Cirsium vulgare*)
- Cocklebur (*Xanthium strumarium*)
- Dock (*Rumex* spp.)
- Goldenrod (*Solidago* spp.)
- Pokeweed (*Phytolacca americana*)
- Purslane (*Portulaca* spp.)
- Yellow starthistle (*Centaurea solstitialis*)

Apply 4-6 pints per acre\*

- Canada thistle (*Cirsium arvense*)
- Giant ragweed (*Ambrosia trifida*)
- Little mallow (*Malva parviflora*)
- Milkweed (*Asclepias* spp.)

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- Primrose (*Oenothera kunthiana*)
- Silverleaf nightshade (*Solanum elaeagnifolium*)
- Sowthistle (*Sonchus* spp.)
- Texas thistle (*Cirsium texanum*)

VINES AND BRAMBLES

Apply 1 pint per acre

~~Field bindweed (*Convolvulus arvensis*)~~

Hedge bindweed (*Calystegia sepium*)

Apply 2-3 pints per acre\*

Wild buckwheat (*Polygonum convolvulus*)

Apply 3-4 pints per acre\*

Greenbriar (*Smilax* spp.)

Honeysuckle (*Lonicera* spp.)

Morningglory (*Ipomoea* spp.)

Poison ivy (*Rhus radicans*)

Redvine (*Brunnichia cirrhosa*)

Wild rose (*Rosa* spp.)

- Including: Multiflora rose (*Rosa multiflora*)
- Macartney rose (*Rosa bracteata*)

Apply 4-6 pints per acre\*

Blackberry (*Rubus* spp.)\*\*

Dewberry (*Rubus* spp.)\*\*

Kudzu (*Pueraria lobata*)

Trumpetcreeper (*Campsis radicans*)

Virginia creeper (*Parthenocissus quinquefolia*)

Wild grape (*Vitis* spp.)



BRUSH SPECIES

Apply 4-6 pints per acre\*

- Ash (*Fraxinus* spp.)
- Boxelder (*Acer negundo*)
- Cherry (*Prunus* spp.)
- Chinese tallow-tree (*Sapium sebiferum*)
- ~~Dogwood (*Cornus* spp.)~~
- Hawthorn (*Crataegus* spp.)
- Hickory (*Carya* spp.)
- Maple (*Acer* spp.)
- Mulberry (*Morus* spp.)
- Oak (*Quercus* spp.)
- Persimmon (*Diospyros virginiana*)
- Poplar (*Populus* spp.)
- Privet (*Ligustrum vulgare*)
- Red Maple (*Acer rubrum*)
- Saltcedar (*Tamarix ramosissima*)
- Sassafras (*Sassafras albidum*)
- Sumac (*Rhus* spp.)
- Sweetgum (*Liquidambar styraciflua*)
- Willow (*Salix* spp.)
- Yellow poplar (*Liriodendron tulipifera*)

\*The higher rates should be used where heavy or well established infestations occur.

\*\* The degree of control is species dependent. Some *Rubus* species may not be controlled.

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