Department of Agriculture
STATE OF HAWAII
LICENSED
PERIOD 2011-2013 LIC. NO.

Department of Agriculture
STATE OF HAWAII
LICENSED
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Nufarm

POLARIS® SP

Herbicide

For control of undesirable vegetation on forestry sites, pasture, rangeland and industrial noncropland areas including railroad, utility, pipeline, highway rights of way, utility plant sites, petroleum tank farms, pumping installations, storage areas, non-agricultural fence lines, non-irrigation ditchbanks, road rights-of-ways, transmission right-of-ways, and industrial bareground areas, 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-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)*	27.6%
OTHER INGREDIENTS:	72.4%
TOTAL:	100.0%

* Contains 2.45 lbs/gal of the isopropylamine salt of imazapyr, or 2.0 lbs/gal of imazapyr acid equivalent.

KEEP OUT OF REACH OF CHILDREN

CAUTION

SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300

For Medical Emergencies Only, Call (877) 325-1840

0 94922 05599 6

EPA Reg. No. 228-536
EPA Est. No. 228-IL-1

Net Contents
2.5 Gal.
(9.46 L)

Manufactured for
Nufarm Americas Inc.
150 Harvester Drive
Burr Ridge, IL 60527

Nufarm

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS
CAUTION

Causes moderate eye irritation. Avoid contact with skin, eyes or clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Some materials are chemical resistant to this product are natural rubber ≥14 mils. If you want more options, follow the instructions for category A on the 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 mixers and loaders, plus applicators using handheld equipment.

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

Pilots must use an enclosed cockpit that meet 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 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. If pesticide gets on skin, wash immediately with soap and water.
- 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.

FIRST AID

IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.

HOT LINE 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 1-877-325-1840 for emergency medical treatment information.

PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored, and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers. Do not mix, store, or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to plants. Drift and run off 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 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.

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

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. The requirements in this box apply to use on trees being grown for sale or other commercial use, or for commercial seed production, or for production of timber or wood products, or for research purposes.

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:

- coveralls
- chemical-resistant gloves made of any waterproof material
- shoes plus socks
- protective eyewear

NON-AGRICULTURAL 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.

This product may be used only in accordance with directions and restrictions in this label. Keep containers closed to avoid spills and contamination.

PRECAUTIONS AND RESTRICTIONS

Do not use on food or feed crops. Do not apply to the inside of ditches used to transport irrigation water. Keep from contact with fertilizers, insecticides, fungicides, and seeds to prevent unintentional exposure of desirable vegetation to this product. Do not apply or drain or flush equipment on or near sensitive desirable 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 Christmas trees. Thoroughly clean application equipment after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

PRODUCT USE INFORMATION

This product is an aqueous formulation that is readily mixable with water, or a recommended spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil. For foliar applications, this product may be mixed with water as the spray carrier or an emulsion carrier may be prepared by mixing this product into water and then adding a suitable seed oil at 12 to 50%, by volume. This product is to be mixed with water or a spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil and applied as a spray to cut stumps. This product should be mixed with a spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil for application to the basal area of brush and trees. Adequate agitation should be maintained with all emulsion mixtures of this product to prevent phase separation. Prior to actual tank mixing with other products, herbicides and carrier oils, compatibility testing in small containers is recommended!

This product is for vegetation control in forestry sites. Roadsides contiguous with the treated area may be included.

This product is used for control of vegetation in forestry site preparation, in directed applications for conifer release and for mid-rotation release using understory broadcast applications.

This product is also used for the control of undesirable vegetation along non-irrigation ditch banks and for the establishment and maintenance of wildlife openings, except in the state of California. See use directions for CUT STUMP TREATMENTS, TREE

INJECTION TREATMENTS, FRILL OR GIRDLE TREATMENTS, THINLINE BASAL AND STEM APPLICATIONS, LOW VOLUME BASAL BARK TREATMENTS and LOW VOLUME FOLIAR APPLICATIONS.

This product is also recommended for control of undesirable vegetation on pasture, rangeland and industrial noncropland areas including railroad, utility, pipeline, highway rights of way, utility plant sites, petroleum tank farms, pumping installations, storage areas, fence rows, roads, transmission lines, and industrial bareground areas.

This product may be applied on forestry sites that contain areas of temporary surface water caused by the collection of water between planting beds, in equipment ruts, or in other depressions created by forest management activities, except in the states of California and New York. It is permissible to treat drainage ditches, intermittent drainage, intermittently flooded low lying sites, seasonally dry flood plains, and transitional areas between upland and lowland sites when no water is present, except in the states of California and New

York. Only the edge of drainage ditches can be treated for drainage ditches that contain water. It is also permissible to treat marshes, swamps, and bogs after water has receded, as well as seasonally dry flood deltas, except in the states of California and New York. Do not make applications to natural or man-made bodies of water such as lakes, reservoirs, ponds, streams, rivers and canals.

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

MANAGING OFF-TARGET MOVEMENT

The following information is provided as general guidance for managing off-target movement. Specific use directions for this product may differ depending on the application technique used and the vegetation management objective.

Spray Drift: Avoiding spray drift at the application site is the responsibility of the applicator. The interactions of many equipment-and-weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species or non-target crops) is minimal. Do not apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions.

To minimize spray drift, the applicator should be familiar with and take into account the following drift reduction advisory information.

Additional information may be available from state enforcement agencies or the Cooperative Extension on the application of this product.

The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity and Temperature Inversions).

CONTROLLING DROPLET SIZE

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. Do not use nozzles producing a mist droplet spray.

APPLICATION HEIGHT
Making applications at the lowest possible height (helicopter, ground driven spray boom) that is safe and practical reduces exposure of droplets to evaporation and wind.

SWATH ADJUSTMENT
When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the treatment area, the applicator must compensate for this displacement by adjusting the path of the application equipment (e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

WIND
Drift potential is lowest between wind speeds of 3-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

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

TEMPERATURE INVERSIONS
Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud, which can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be

indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

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.

AERIAL APPLICATION METHODS AND EQUIPMENT

Use 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.

Aerial Applications:

1. 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.
2. Applicators are required to use upwind swath displacement.
3. The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
4. Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
5. Applications into temperature inversions are prohibited.

GROUND BOOM APPLICATION

(1) 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.
(2) Applications with wind speeds greater than 10 mph are prohibited.
(3) Applications into temperature inversions are prohibited.

GROUND APPLICATION (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.

CONIFER SITE PREPARATION TREATMENTS

This product 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:

Crop Species	Rate (oz/A)
Loblolly Pine *(Pinus taeda)*	48 – 80
Loblolly X Pitch Hybrid	48 – 80
Longleaf Pine *(Pinus palustris)*	48 – 80
Shortleaf Pine *(Pinus echinata)*	48 – 80
Virginia Pine *(Pinus virginiana)*	48 – 80
Slash Pine *(Pinus elliottii)*	40 – 64
Douglas-Fir *(Pseudotsuga menziesii)*	24 – 48
Western Hemlock *(Tsuga heterophylla)*	24 – 48
Coastal Redwood *(Sequoia sempervirens)*	24 – 48
California Red Fir *(Abies magnifica)*	24 – 40
California White Fir *(Abies concolor)*	24 – 40
Jack Pine *(Pinus banksiana)*	24 – 32
Lodgepole Pine *(Pinus contorta)*	24 – 32
Pitch Pine *(Pinus rigida)*	24 – 32
Ponderosa Pine *(Pinus ponderosa)*	24 – 32
Sugar Pine *(Pinus lambertiana)*	24 – 32
White Pine *(Pinus strobus)*	24 – 32
Black Spruce *(Picea mariana)*	24 – 32
Red Spruce *(Picea rubens)*	24 – 32
White Spruce *(Picea glauca)*	24 – 32

Use the specified rate of this product 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.

For tracts to be planted with loblolly, loblolly x pitch hybrid, longleaf pine, shortleaf pine, Virginia pine and slash pine, this product may be applied at a rate of 64 oz per acre on areas that have little to no resprouting vegetation because of recent management activities such as harvesting, mechanical shearing, burning piling or bedding. Applications must be made after September 1.

MIXING AND APPLICATION INSTRUCTIONS FOR SITE PREPARATION

Apply the specified rate of this product per acre in 5 to 20 gallons total spray carrier for helicopter applications or 5 to 40 gallons total spray carrier for mechanical or backpack ground spray applications. Enhanced brownout for burning and improved control of brush and grasses may be obtained by application of this product in 12 to 50% oil:water (volume:volume) emulsion carrier. Methylated or ethylated seed oils containing at least 50% esterified seed oil by volume are recommended. Mix this product into the water portion of the carrier thoroughly, then add the oil and mix thoroughly again to obtain a uniform emulsion. Use the higher label rates of this product and higher spray volumes when controlling particularly dense or multi-layered canopies of hardwood stands, or difficult to control species. Make applications during the growing season; beginning in the spring after full leaf expansion of the target weed or brush has occurred and complete applications before leaf drop in the fall.

Tank mixes may be necessary for chemical control of conifers and other species tolerant to this product in certain cases. Tank mix products may be used provided that the label of the tank mix product does not prohibit such mixing. Observe all precautions and restrictions on the product labels. Always follow the most restrictive label instructions for all products used. Combinations with other products labeled for forest site preparation may kill certain plants such as legume's and blackberry which are desirable for wildlife habitat.

Do not plant seedlings of black spruce (Picea mariana) or white spruce (Picea glauca) on sites that have been site prepared with a broadcast application of this product or into the treated zone of spot or banded site preparation applications for three months following treatment or injury may occur.

HELICOPTER SPRAY EQUIPMENT

All precautions must be taken to minimize or eliminate spray drift. Applications should not be made under gusty conditions. The use of controlled droplet booms and nozzle configurations is recommended.

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.

HARDWOOD SITE PREPARATION TREATMENTS

For site preparation prior to planting hardwood species in the southeast and gulf coast states (Virginia to Texas), use this product at a rate of 32 oz per acre and spray before the end of July. Application in an emulsion carrier with a minimum of 12% oil is recommended. Do not plant hardwood seedlings before January of the year following site preparation or injury may occur.

DIRECTED FOLIAR APPLICATIONS FOR CONIFER RELEASE

This product may be applied as a directed spray using water or oil emulsion carrier for control and suppression of labeled brush and weed species. Directed spray applications may be made using low carrier volumes (generally 10 gallons total spray per acre or less) in labeled conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that the maximum labeled rates per acre listed for the conifer species are not exceeded.

Use directed foliar applications of this product for release of the following conifers from hardwood competition:

Crop Species	Rate (fl oz/Acre)
Loblolly Pine *(Pinus taeda)*	24 – 40
Loblolly X Pitch Hybrid	24 – 40
Virginia Pine *(Pinus virginiana)*	24 – 40
Longleaf Pine *(Pinus palustris)*	24 – 32
Pitch Pine *(Pinus rigida)*	24 – 32
Shortleaf Pine *(Pinus echinata)*	24 – 32
Slash Pine *(Pinus elliottii)*	24 – 32
White Pine *(Pinus strobus)*	16 – 32
Lodgepole Pine *(Pinus contorta)*	16 – 24
Douglas-Fir *(Pseudotsuga menziesii)*	16 – 24
Jack Pine *(Pinus banksiana)*	12 – 24
Black Spruce *(Picea mariana)*	12 – 24
Red Spruce *(Picea rubens)*	12 – 24
White Spruce *(Picea glauca)*	12 – 24

For applications directed to the foliage of undesirable brush mix 2 to 10% this product in water. For brush species with thick leaf cuticles or difficult to control species use oil emulsion carrier containing 12 to 50%, by volume, recommended oil diluent. Apply the spray solution or emulsion to at least two-thirds of each hardwood crown using backpack sprayers or hand held equipment. Do not spray to the point of runoff and avoid spraying the conifers for best results. For low volume foliar applications to control big leaf maple a 5% by volume solution or emulsion of this product is recommended.

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, release treatments may be made late in the growing season after formation of final conifer resting buds. To prevent possibility of conifer injury, do not apply this product when conifers are under stress from drought, diseases, animal or winter injury, or other stresses reducing conifer vigor.

Injury may occur to non-target or desirable hardwoods if they extend from the same root system as treated stems, or their root systems are grafted to those of the treated tree, or if their roots extend into the soil near treated trees.

BAG AND BROADCAST APPLICATIONS FOR CONIFER RELEASE

In Douglas-fir and Ponderosa pine stands, broadcast applications of this product up to 32 oz per acre are permissible when the trees are covered by bags prior to the application. The bags must prevent the spray mix from contacting the conifer foliage. For improved control of brush species, particularly evergreens, add a suitable seed oil at 5 to 12 % by volume. On sites with coarse textured soils. (e.g. decomposed granite, pumice, sandy or rocky sites) or low levels of soil organic matter (generally 5% or less) significant conifer growth inhibition and mortality is possible. Do not use this treatment on these types of sites if conifer growth inhibition and mortality cannot be tolerated.

LATE ROTATION VEGETATION CONTROL IN WESTERN CONIFERS

In California, the Pacific Northwest and Inland Northwest, broadcast aerial applications of this product up to 48 oz per acre are permissible in conifer stands that are targeted for harvesting the year following treatment. Use a minimum spray volume of 15 gallons per acre. For improved control of brush species, particularly evergreens, add a suitable seed oil at 5 to 12 % by volume. Significant conifer injury or mortality must be expected. Do not use this treatment if conifer injury or mortality cannot be tolerated.

UNDERSTORY BROADCAST APPLICATIONS FOR MID-ROTATION RELEASE

This product may be applied as a broadcast application below the conifer canopy to control understory brush and suppress trees for labeled species. Ground spray machinery or hand held equipment may be used to broadcast this product in water or oil emulsion carrier below the crop tree canopy in a manner as to minimize spray contact by the live crown of crop trees.

Ensure that maximum labeled rates per acre listed for crop species below are not exceeded.

Crop Species	Maximum Rate (fl oz/Acre)
Loblolly Pine *(Pinus taeda)*	64
Loblolly X Pitch Hybrid	64
Virginia Pine *(Pinus virginiana)*	64
Longleaf Pine *(Pinus palustris)*	32
Pitch Pine *(Pinus rigida)*	32
Shortleaf Pine *(Pinus echinata)*	32
Slash Pine *(Pinus elliottii)*	32

INDIVIDUAL HARDWOOD TREATMENTS

Individual Hardwood Treatments (Cut Stump Treatments, Tree Injections Treatments, Frill or Girdle Treatments, Thinline Basal and Stem Applications, Low Volume Basal Bark Treatments, and Low Volume Foliar Applications) can be used on the following Rangeland and Industrial Noncropland Areas: Railroad, Utility, Pipeline, Highway Right-of-Way, Utility Plant Site, Petroleum Tank Farms, Pumping Installations, Storage Areas, Non-Agricultural Fence Lines, Non-Irrigation Ditchbanks, Road Right-of-Ways, Transmission Right-of-Ways and Maintenance of Wildlife Openings.

CUT STUMP TREATMENTS

Mix 8.0-16.0 fluid ounces of this product in one gallon of water*, or a spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil.

This product may be tank mixed with Tahoe® 3A, Tahoe® 4E, picloram, Razor/Razor® Pro, or Foresters'® Non-Selective to control labeled species. Spray or brush this product's solution onto the cambium area of the freshly cut stump surface. Insure that this product's solution thoroughly wets the cambium area (the wood next to the bark) of the stump. The use of a surfactant or penetrating agent may improve uptake through partially callused cambiums. Applications can be made anytime during the year except during periods of heavy sap flow in the spring. Do not over apply causing puddling.

***Note:** Use water as a diluent only when temperatures are sufficient to prevent freezing or add antifreeze (ethylene glycol) according to label directions to prevent freezing.

TREE INJECTION TREATMENTS

No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is directly injected into agricultural plants.

Mix 8.0-12.0 fluid ounces of this product in one gallon of water*. Using standard injection equipment, apply 1 ml of this product's solution at each injection site around the tree with no more than 1 inch intervals between cut edges. Insure that the injector completely penetrates the bark at each site.

***Note:** Use water as a diluent only when temperatures are sufficient to prevent freezing or add antifreeze (ethylene glycol) according to label directions to prevent freezing.

FRILL OR GIRDLE TREATMENTS

Mix 8.0-12.0 fluid ounces of this product in one gallon of water*, or a spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil. Using a hatchet, machete, or similar tool, make cuts through the bark and completely around the tree with no more than 2 inch intervals between cut edges. Spray or brush this product's solution into each cut until thoroughly wet.

***Note:** Use water as a diluent only when temperatures are sufficient to prevent freezing or add antifreeze (ethylene glycol) according to label directions to prevent freezing.

THINLINE BASAL AND STEM APPLICATIONS

This product may be applied as a thinline basal or arcing application to the stems of susceptible species such as big leaf maple (Acer macrophyllum), willow (Salix spp.) and Eucalyptus (Eucalyptus spp.) with a stem ground line diameter of 3 inches or less. Mix 24 to 48 ounces of this product in one gallon of spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil. Maintain uniform mixtures with frequent agitation. Direct a thin line of the spray solution to the stems beginning a few feet from the ground and descending toward the base of the tree making a zig-zag motion. Do not over apply causing puddling.

LOW VOLUME BASAL BARK TREATMENTS

Mix 8.0-12.0 fluid ounces of this product in one gallon of spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil. To control mixed brush species with up to 4 inch stem diameter at breast height, spray to wet the lower 12-18 inches of the stem with this product's oil mixture (include the root collar area). Do not over apply causing dripping or puddling. Maintain uniform mixtures with frequent agitation.

LOW VOLUME FOLIAR APPLICATIONS

This product may be applied as a low volume foliar application. Mix 3-5% of this product in water and adjuvant or in a spring oil, white mineral oil, dormant oil, horticultural oil or food/feed seed oil. For small brush spray down on the crown to cover approximately 70% of the plant foliage. For larger brush insure coverage on as much of the crown as possible and spray at least two sides of the plant. May be tank mixed with other labeled herbicides. Use a tank mix of 3 to 5% of this product plus 15 to 20% Tahoe 4E in basal oil to control black locust, honey locust, hackberry, elms and other species listed on manufacturer's labels. Use the higher rate of this product (5%) in areas containing sassafras, oak, hickory, cherry, and maples or in the southern 2/3's of the U.S. A tank mix of 3% of this product + Tahoe 4E is effective in the Northeastern U.S.

SPRAY SOLUTION MIXING GUIDE FOR LOW VOLUME FOLIAR APPLICATIONS

AMOUNT OF SPRAY SOLUTION BEING PREPARED	DESIRED CONCENTRATION (fluid volume)			
	This Product		Tahoe ® 4E	
	3%	5%	15%	20%
1 gallon	3.8 oz	6.4 oz	19.2 oz	25.6 oz
3 gallons	11.5 oz	19.2 oz	57.6 oz	76.8 oz
4 gallons	15.4 oz	25.6 oz	76.8 oz	102.4 oz
5 gallons	19.2 oz	32.0 oz	96.0 oz	1.0 gallon
50 gallons	1.5 gallons	2.5 gallons	7.5 gallons	10.0 gallons
100 gallons	3.0 gallons	5.0 gallons	15.0 gallons	20.0 gallons

INVERT EMULSIONS

This product can be applied as an invert emulsion carrier. The carrier is a thick invert water-in-oil spray emulsion designed to minimize spray drift and spray run off, 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. Do not exceed 3 quarts/Acre of this product.

TOTAL VEGETATION CONTROL WHERE BAREGROUND IS DESIRED IN THE INDUSTRIAL NONCROP AREAS, RAILROAD, UTILITY, PIPELINE, AND HIGHWAY RIGHT-OF-WAYS, UTILITY PLANT SITES, PETROLEUM TANK FARMS, PUMPING INSTALLATIONS, STORAGE AREAS, NON-AGRICULTURAL FENCE LINES, NON-IRRIGATION DITCHBANKS, ROAD RIGHT-OF-WAYS, TRANSMISSION RIGHT-OF-WAYS, AND MAINTENANCE OF WILDLIFE OPENINGS

This product is an effective herbicide for preemergence or post-emergence control of many annual and perennial broadleaf and grass weeds where bareground is desired in the following Industrial Noncropland areas: Railroad, Utility, Pipeline, Highway Right-of-Way, Utility Plant Site, Petroleum Tank Farms, Pumping Installations, Storage Areas, Non-Agricultural Fence Lines, Non-Irrigation Ditchbanks, Road Right-of-Ways, Transmission Right-of-Ways and Maintenance of Wildlife Openings.

This product is particularly effective on hard-to-control perennial grasses. This product at 1.5 to 6 pints per acre can be used alone or in a tank mix with other labeled herbicides. The degree and duration of control are dependent on the rate of this product used, tank-mix partner, the volume of carrier, soil texture, rainfall and other conditions.

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

Applications of this product may be made anytime of the year. Use equipment calibrated to deliver desired gallons per acre spray volume and uniformly distribute the spray pattern over the treated area.

Post-Emergence Applications: 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, this product may be tank-mixed with products such as Razor®, or Edict®. Tank mixes with 2,4-D or products containing 2,4-D have reduced performance of this product. Always follow the more restrictive label when tank-mixing.

Spot Treatments: This product may be used as a follow-up treatment to control escapes or weed encroachment in a bareground situation. For increased burndown, include Razor®, Edict®, or similar products. For added residual weed control or to increase the weed spectrum add ProClipse®, Spyder® or diuron. Always follow the more restrictive label when tank-mixing.

WEEDS CONTROLLED

This product will provide postemergence control and some residual control of the following target vegetation species. Degree of control is both species and rate dependent.

GRASSES

The species of annual and perennial grasses controlled by this product include the following:

Annual bluegrass *(Poa annua)*
Bahiagrass *(Paspalum notatum)*
Barnyardgrass *(Echinochloa crus-galli)*
Beardgrass *(Andropogon spp.)*
Bermudagrass *(Cynodon dactylon)*
Big bluestem *(Andropogon gerardii)*
Broadleaf signalgrass *(Brachiaria platyphylla)*
Canada bluegrass *(Poa compressa)*
Cattail *(Typha spp.)*
Cheat *(Bromus secalinus)*
Cogongrass *(Imperata cylindrica)*[1]
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)*
Junglerice *(Echinochloa colonum)*
Kentucky bluegrass *(Poa pratensis)*
Lovegrass *(Eragrostis spp.)*
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.)*
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)*

[1]Use minimum of 48 oz per acre.

BROADLEAF WEEDS

The species of annual and perennial broadleaf weeds controlled by this product include the following:

Arrowwood *(Pluchea sericea)*
Broom snakeweed *(Gutierrezia sarothrae)*
Bull Thistle *(Cirsium vulgare)*
Burclover *(Medicago spp.)*
Burdock *(Arctium spp.)*
Camphorweed *(Heterotheca subaxillaris)*
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 this product include the following:

Field bindweed *(Convolvulus arvensis)*
Hedge bindweed *(Calystegia sequium)*
Honeysuckle *(Lonicera spp.)*[1]
Morningglory *(Ipomoea spp.)*
Poison ivy *(Rhus radicans)*
Redvine *(Brunnichia cirrhosa)*
Trumpetcreeper *(Campsis radicans)*
Virginia creeper *(Parthenocissus quinquefolia)*
Wild buckwheat *(Polygonum convolvulus)*
Wild grape *(Vitis spp.)*
Wild rose *(Rosa spp.)*[1]
Including Multiflora rose *(Rosa multiflora)*
Macartney rose *(Rosa bracteata)*

[1]Use higher labeled rates.

WOODY BRUSH AND TREES

The species of woody brush and trees controlled by this product include the following:

Alder *(Alnus spp.)*
American beech *(Fagus grandifolia)*
Ash *(Fraxinus spp.)*[1]
Aspen *(Populus spp.)*
Australian pine *(Casuarina equisetifolia)*[5]
Autumn olive *(Elaeagnus umbellata)*
Bald cypress *(Taxodium distichum)*[4]
Bigleaf maple *(Acer macrophyllum)*[1]
Birch *(Betula spp.)*
Black locust *(Robinia pseudoacacia)*[5]
Black oak *(Quercus kelloggii)*
Blackgum *(Nyssa sylvatica)*[2]
Boxelder *(Acer negundo)*
Brazilian peppertree *(Schinus terebinthifolius)*
Ceanothis *(Ceanothis spp.)*
Cherry *(Prunus spp.)*[1,2]
Chinaberry *(Melia azedarach)*
Chinese tallow-tree *(Sapium sebiferum)*
Chinquapin *(Castanopsis chrysophylla)*[4]
Cottonwood *(Populus spp.)*
Cypress *(Taxodium spp.)*
Dogwood (*Cornus spp.)*[1]
Elderberry *(Sambucus spp.)*[5]
Elm *(Ulmus)*[5]
Eucalyptus *(Eucalyptus spp.)*
Hawthorn *(Crataegus spp.)*
Hazel *(Corylus cornuta)*[5]
Hickory *(Carya spp.)*[1]
Holly *(Ilex spp.)*[1,4]
Including Gallberry *(Ilex glabra)*[4,5]
Tall gallberry *(Ilex coriacea)*[4]
Yaupon *(Ilex vomitoria)*[4]
Honeylocust *(Gleditsia triacanthos)*[5]
Huckleberry *(Gaylussacia spp.)*
Lyonia spp.
Including Fetterbush *(Lyonia lucida)*
Staggerbush *(Lyonia mariana)*
Madrone *(Arbutus menziesii)*

(continued)

WOODY BRUSH AND TREES *(continued)*

Manzanita, greenleaf *(Arctostaphylos patula)*[4]
Maple *(Acer spp.)*
Melaleuca *(Melaleuca quinquenervia)*
Mulberry *(Morus spp.)*[1,3]
Oak *(Quercus spp.)*[1,3]
Persimmon *(Diospyros virginiana)*[2]
Poison oak *(Rhus diversiloba)*
Popcorn-tree *(Sapium sebiferum)*
Poplar *(Populus spp.)*[2]
Privet *(Ligustrum vulgare)*
Red alder *(Alnus rubra)*
Red maple *(Acer rubrum)*
Saltcedar *(Tamarix pentandra)*
Sassafras *(Sassafras albidum)*
Scotch broom *(Cytisus scoparius)*[5]
Sourwood *(Oxydendrum arboreum)*[2]
Sumac *(Rhus spp.)*
Sweetbay magnolia *(Magnolia virginiana)*[4,5]
Sweetgum *(Liquidambar styraciflua)*
Sycamore *(Platanus occidentalis)*
Tanoak *(Lithocarpus densiflorus)*[1,4,5]
TiTi *(Cyrilla racemiflora)*[1,4]
Tree of heaven *(Ailanthus altissima)*[5]
Vaccinium spp.
Including Blueberry *(Vaccinium spp.)*
Sparkleberry *(Vaccinium arboreum)*
Waxmyrtle *(Myrica californica)*[4,5]
(Myrica cerifera)[4,5]
Willow *(Salix spp.)*
Yellow-poplar *(Liriodendron tulipifera)*[1]

[1]Use higher labeled rates.
[2]Best control with applications prior to formation of fall leaf color.
[3]The degree of control may be species dependent.
[4]Oil emulsion carrier is recommended.
[5]Tank mix with Tahoe 4E as a basal or cut stump treatment

FOR SPOT TREATMENT WEED CONTROL IN GRASS PASTURE AND RANGELAND

For the control of undesirable vegetation in grass pasture and rangeland, this product may be applied as a spot treatment at a rate of 2 to 48 fluid ounces 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 one tenth 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 fluid ounces per acre per year. Grazing and haying restrictions: There are no grazing restrictions following application of this product. DO NOT cut forage grass for hay for seven days after application of this product.

GUIDELINES FOR RANGELAND USE

This product may be applied to rangeland for the control of undesirable vegetation in order to achieve one or more of the following vegetation management objectives:

1. The control of undesirable (non-native, invasive and noxious) plant species.
2. The control of undesirable vegetation in order to aid in the establishment of desirable rangeland plant species.
3. The control of undesirable vegetation in order to aid in the establishment of desirable rangeland vegetation following a fire.
4. The control of undesirable vegetation for purposes of wildfire fuel reduction.
5. The release of existing desirable rangeland plant communities from the competitive pressure of undesirable plant species.
6. The control of undesirable vegetation for purposes of wildlife habitat improvement.

To ensure the protection of threatened and endangered plants when applying this product 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.

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 may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Nonrefillable Containers 5 Gallons or Less: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

WARRANTY DISCLAIMER

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