

Reading and Understanding Herbicide Labels

SPECIMEN

Detail®
Powered by **Kixor®** Herbicide

Group **14** Herbicide

For postemergence and residual weed control in noncropland areas

Active Ingredients:
sulfentrazone, N-[p-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-(trifluoromethyl)-3,6-dihydro-1(1H)-pyrimidin-2-yl)-N-isopropyl-N-methylsulfamido]..... 29.74%
Other Ingredients: 70.26%
Total: 100.00%
*Contains 2.16 pounds active ingredient/sulfentrazone per gallon formulated as a water based suspension concentrate

EPA Reg. No. 7909-297 EPA Est. No.

**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 the label, find someone to explain it to you in detail.)

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

In case of an emergency endangering life or property involving this product, call day or night 1-800-852-HELP (4357).

Net Contents:

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
We create chemistry

Jim Bean
Strategic Accounts Manager
Professional Vegetation Management
BASF Corporation

Purpose

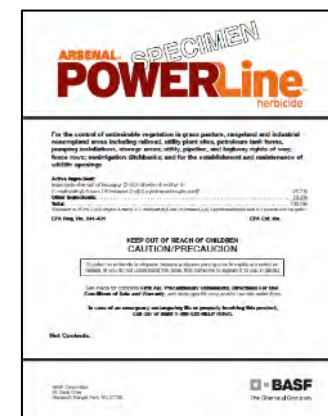
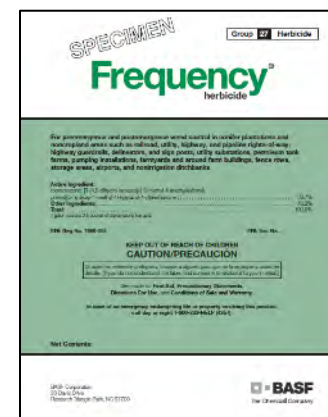
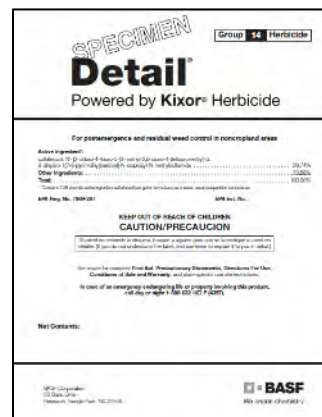
■ Understand a product label

- ▶ Type of information
- ▶ Where to find information
- ▶ What it means

■ Four example products

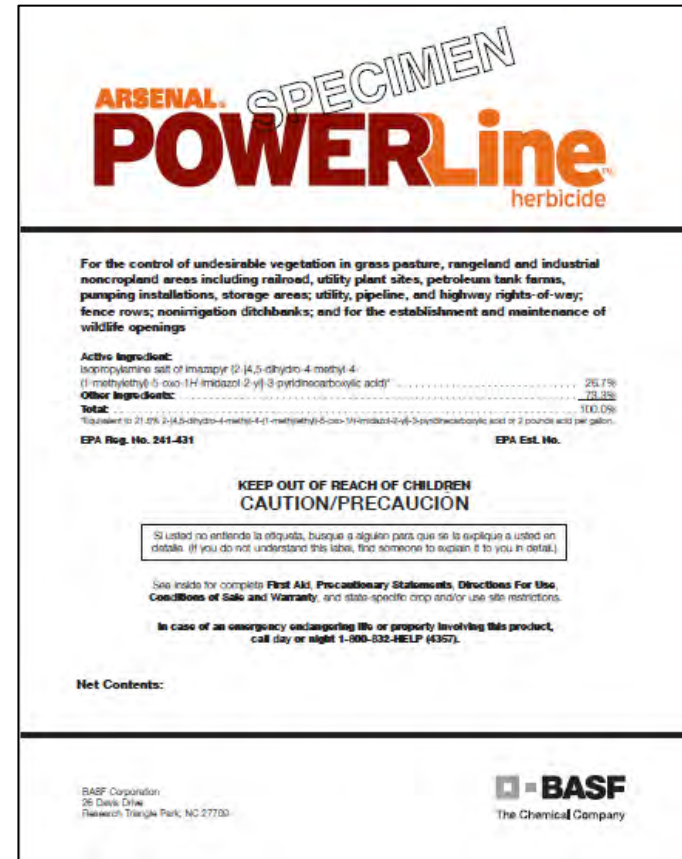
- ▶ Detail
- ▶ Frequency
- ▶ Plateau
- ▶ Arsenal PowerLine

■ Answer Questions



The Label

- Legal document
- Contains specific information
- Components
 - Required information
 - Additional information
 - Varies by manufacturer



The Label

■ Format varies

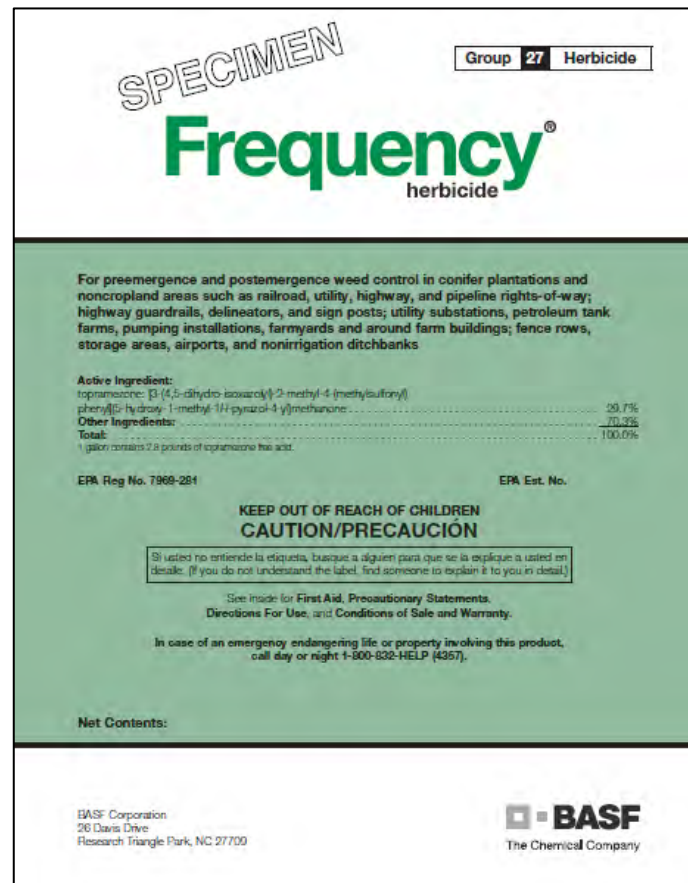
■ Company

- Arrangement of information

■ Market

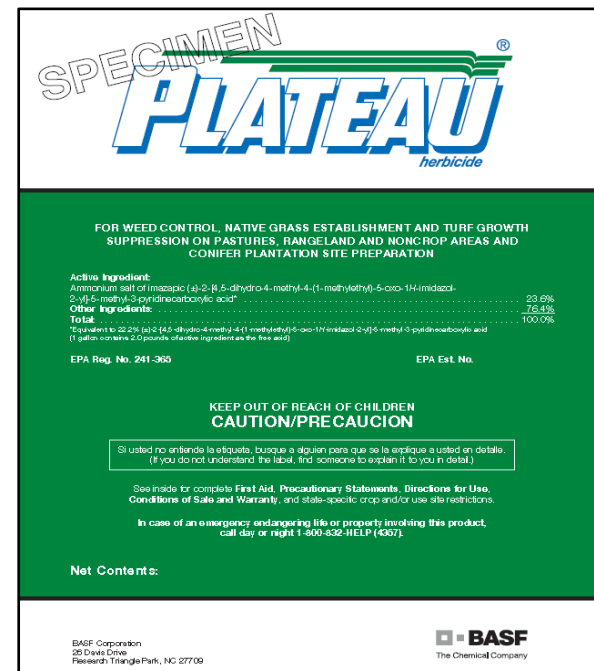
■ Product Type

- One page
- Long book



Label Requirements

1. Trade Name
2. Common Name
3. Chemical Name
4. Signal Word
5. Name and Address of Manufacturer
6. PPE Requirements
7. Precautionary Statements
8. Use Classification
9. Directions for Use



The Label

■ Trade Name

- ▶ Most commonly used name
- ▶ Product name
- ▶ Can be multiple name for the same product

■ Common Name

- ▶ Name of active ingredient
- ▶ Can have several trade names
- ▶ Chemical name

Chemical Group Number

Group **14** Herbicide

Trade Name

Detail[®]

Powered by **Kixor**[®] Herbicide

Common Name

Active Ingredient*:

saflufenacil: N'-[2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-(trifluoromethyl)-3,6-dihydro-1(2H)-pyrimidinyl)benzoyl]-N-isopropyl-N-methylsulfamide

Chemical Name

29.74%

Other Ingredients:

70.26%

Total:

100.00%

*Contains 2.85 pounds active ingredient saflufenacil per gallon formulated as a water-based suspension concentrate

EPA Reg. No. 7969-297

EPA Est. No.

Signal Word

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

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Use Type

RESTRICTED USE PESTICIDE

Due to Acute Toxicity

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.



A WEED, GRASS AND HARVEST AID HERBICIDE

THIS PRODUCT MAY NOT BE USED FOR
REFORMULATION OR REPACKAGING, EXCEPT AS MAY BE
AUTHORIZED BY WRITTEN AGREEMENT FROM ZENECA.

| | |
|---|---------|
| ACTIVE INGREDIENT: | |
| Paraquat dichloride (1,1'-dimethyl-4,4'-bipyridinium dichloride)..... | 37.00% |
| INERT INGREDIENTS:..... | 63.00% |
| Total | 100.00% |

Contains 2.5 lbs paraquat cation per gallon.

Contains stench (odor) and emetic.

EPA Reg. No. 10182-280

KEEP OUT OF REACH OF CHILDREN

DANGER  **POISON**

PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

ONE SWALLOW CAN KILL!

SYMPTOMS ARE PROLONGED AND PAINFUL. ONSET OF SYMPTOMS MAY BE
DELAYED FOR UP TO 3 DAYS AFTER SWALLOWING.

- DO NOT USE OR STORE IN OR AROUND THE HOME.
- DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE.
- NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS.

SEE INSIDE FOR STATEMENT OF PRACTICAL TREATMENT
AND COMPLETE DIRECTIONS FOR USE

Made in USA

ZENECA Ag Products

ZENECA, Inc.

Wilmington, Delaware 19854-0001

150831

CAL089813 (REV. 1201)

Signal Word

SPECIMEN

Group 27 Herbicide

Frequency[®]

herbicide

Use Sites

For preemergence and postemergence weed control in conifer plantations and noncropland areas **such as** railroad, utility, highway, and pipeline rights-of-way; highway guardrails, delineators, and sign posts; utility substations, petroleum tank farms, pumping installations, farmyards and around farm buildings; fence rows, storage areas, airports, and nonirrigation ditchbanks

Active Ingredient:

topramezone: [3-(4,5-dihydro-isoxazolyl)-2-methyl-4-(methylsulfonyl)

phenyl](5-hydroxy-1-methyl-1H-pyrazol-4-yl)methanone 29.7%

Other Ingredients: 70.3%

Total: 100.0%

1 gallon contains 2.8 pounds of topramezone free acid.

EPA Reg No. 7969-281

Unique EPA Registration Number

Est. No.

KEEP OUT OF REACH OF CHILDREN
CAUTION/PRECAUCIÓN

A.I. lbs. per Gallon

Aquatics and Pasture / Rangeland must be listed for use on these sites

BASF
We create chemistry

ARSENAL[®] SPECIMEN **POWERLine[™]** herbicide

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

Active Ingredient:

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

Other Ingredients: 73.3%

Total: 100.0%

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

EPA Reg. No. 241-431

EPA Est. No.

KEEP OUT OF REACH OF CHILDREN
CAUTION/PRECAUCIÓN

% A.I. acid

% A.I. salt

Watch out for products with multiple a.i. loads
 Arsenal versus Arsenal AC

The Label

Signal Word

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 the label, find someone to explain it to you in detail.)

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

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

Emergency Telephone Number

SPECIMEN PLATEAU[®] herbicide

FOR WEED CONTROL, NATIVE GRASS ESTABLISHMENT AND TURF GROWTH
SUPPRESSION ON PASTURES, RANGELAND AND NONCROP AREAS AND
CONIFER PLANTATION SITE PREPARATION

Active Ingredient:

Ammonium salt of imazapic (±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-
2-yl]-5-methyl-3-pyridinecarboxylic acid*

23.6%

Other Ingredients:

76.4%

Total:

100.0%

*Equivalent to 22.2% (±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-methyl-3-pyridinecarboxylic acid
(1 gallon contains 2.0 pounds of active ingredient as the free acid)

EPA Reg. No. 241-365

EPA Est. No.

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 the label, find someone to explain it to you in detail.)

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

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

Net Contents:

Manufacturer Address

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

Manufacturer Name

BASF
The Chemical Company

BASF
We create chemistry

The Label

- First Aid
- Precautionary Statements
 - ▶ Hazards to humans and domestic animals
 - ▶ Engineering controls
 - ▶ PPE information
 - ▶ User safety recommendations
 - ▶ Environmental hazards

The Label

| FIRST AID | |
|---|--|
| If swallowed | <ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• DO NOT induce vomiting unless told to by a poison control center or doctor.• DO NOT give anything to an unconscious person. |
| If in eyes | <ul style="list-style-type: none">• Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes.• Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes.• Call a poison control center or doctor for treatment advice. |
| If on skin | <ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15 to 20 minutes.• Call a poison control center or doctor for treatment advice. |
| If inhaled | <ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by 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 BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357). | |

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Harmful if swallowed or absorbed through the skin.

Personal Protective Equipment (PPE)

Some materials that are chemically resistant to this product are listed below. If you want more options, follow the instructions for **Category A** on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves **Category A**
- Shoes plus socks
- Goggles, face shield, or safety glasses

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

PPE Options



User Safety Recommendations:

Users Should:

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

IMPORTANT

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

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

Use Precautions

- **Maximum annual use rate** - **DO NOT** apply more than a maximum cumulative amount of 6 fl ozs/A of **Detail® herbicide** (0.134 pound active ingredient saflufenacil per acre) per year from broadcast or banded applications.
- **Rainfastness** - **Detail** is rainfast 1 hour after application. Burndown activity may be reduced if rain occurs within 1 hour of application.
- **DO NOT** contaminate irrigation ditches or water used for domestic purposes.
- **DO NOT** apply through any type of irrigation system (e.g. chemigation).
- **Detail is not for sale, distribution, or use in Nassau and Suffolk counties in New York State.**

Environmental Hazards

Environmental Hazards

For terrestrial uses, **DO NOT** apply directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate.

Groundwater Advisory. Saflufenacil has properties and characteristics associated with chemicals detected in groundwater. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

Surface Water Advisory. Saflufenacil may impact surface water due to runoff of rainwater. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having high potential for reaching surface water via runoff for several weeks after application. A level, well-maintained buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of this chemical from runoff water and sediment. Runoff of this product will be reduced by avoiding application when rainfall is forecast to occur within 48 hours.

Environmental Hazards

Endangered Species Protection Requirements

This product may have effects on federally listed threatened or endangered plant species or their critical habitat. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the county or parish in which you are applying the pesticide. To determine whether your county or parish has a Bulletin, and to obtain that Bulletin, consult <http://www.epa.gov/espp/>, or call 1-800-447-3813 no more than 6 months before using this product. Applicators must use Bulletins that are in effect in the month in which the pesticide will be applied. New Bulletins will generally be available from the above sources 6 months prior to their effective dates.

Directions For Use

Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling. This label must be in the possession of the user at time of herbicide application.

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.

Observe all precautions and limitations in this label and the labels of products used in combination with

Detail® herbicide. The use of **Detail** not consistent with this label can result in injury to crops, animals, or persons. Keep containers closed to avoid spills and contamination.

Unless otherwise directed in supplemental labeling, all applicable directions, restrictions, precautions, and **Conditions of Sale and Warranty** are to be followed.



Use Requirements

1. Agricultural
2. Non-Agricultural
3. Personal Protective Equipment - PPE
4. Re-Entry Interval - REI

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**.

EXCEPTION: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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, such as natural rubber ≥ 14 mils
- Shoes plus socks
- Protective eyewear

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard 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 treated areas without protective clothing until sprays have dried.



Storage and Disposal

1. Storage
2. Disposal
3. Container Handling
 - a. Non-refillable
 - b. Refillable
4. In Case of Emergency
 - a. CHEMTREC – Spills
 - b. Company Help Numbers – Doctor, BASF product spill

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide Storage

DO NOT use or store near heat or open flame. Store in original container in a well-ventilated area separately from fertilizer, feed, or foodstuffs. Avoid cross-contamination with other pesticides.

Pesticide Disposal

Wastes resulting from this product may be disposed of on-site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact the state agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL

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

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

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

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

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

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

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

Spills

In case of large-scale spill of this product, call:

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

Steps to take if this material is released into the environment or spilled:

- Wear Personal Protective Equipment (PPE) and avoid exposure when managing a spill. (See **Precautionary Statements** section of this label for required PPE.)
- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing, and wash affected skin areas with soap and water. Wash clothing before reuse.
- Keep spill out of all sewers and open bodies of water.

General / Product Information

1. Description of Product
2. Mode of Action
3. Resistance Management
4. Weeds Controlled

General Information

GENERAL INFORMATION

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

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

Application Methods. **Arsenal PowerLine** will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species. **Arsenal PowerLine** will provide residual control of labeled weeds that germinate in the treated areas. This product may be applied either preemergence or postemergence to the weeds; however, postemergence application is the

method of choice in most situations, particularly for perennial species. For maximum activity, weeds should be growing vigorously at the time of postemergence application, and the spray solution should include a surfactant (see **ADJUVANTS** section for specific recommendations). These solutions may be applied selectively using low-volume techniques or may be applied broadcast by using ground equipment or aerial equipment. In addition, **Arsenal PowerLine** may also be used for stump and cut stem treatments (see specific directions).

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

Product Information

Frequency® herbicide is a suspension concentrate (SC) broad-spectrum preemergence and systemic postemergence herbicide for control or growth suppression of broadleaf and grass weeds in noncropland areas. When applied as directed, **Frequency** will control or suppress the broadleaf weeds listed in **Table 1. Broadleaf Weeds Controlled** and the grass weeds listed in **Table 2. Grass Weeds Controlled**. **Frequency** may be used for control of these weeds in bareground, conifer plantations, and selective weeding in areas such as utility, highway, and pipeline rights-of-way, etc. Postemergence applications of **Frequency** must include spray additives (see **Additives** section and **Mixing Order** section of this label).

Mode of Action

Frequency is absorbed by leaves, roots, and shoots and translocated to the growing points of sensitive weeds to provide control of emerged weeds. **Frequency** controls weeds by inhibiting carotenoid biosynthesis (HPPD inhibitor **Group 27**). Temperatures and moisture conditions for active plant growth are important for optimum **Frequency** activity. **Frequency** application to weeds during periods of stress conditions, such as cold temperatures and/or drought, may result in reduced performance.

Mode of Action

Detail is a potent inhibitor of protoporphyrinogen-oxidase belonging to herbicide mode of action

Group 14 (WSSA)/Group E (HRAC). **Detail** is rapidly absorbed by roots and foliage. Following inhibition of protoporphyrinogen-oxidase, plant death is the result of membrane damage. Under active growing conditions, susceptible emerged weeds usually develop chlorotic and necrotic injury symptoms within hours and die within a few days. Susceptible emerging weed seedlings will usually die as they reach the soil surface or shortly after emergence.

Bareground Control

Appl 6/15/16

1 WAT



7 oz. Frequency + 2 oz. Detail + 32 oz. Arsenal + 1% MSO

Bareground Control

Appl 6/15/16



3 MAT



7 oz. Frequency + 2 oz. Detail + 32 oz. Arsenal + 1% MSO

Bareground Control

An effective option versus Esplanade + Method + Glyphosate

Appl 6/15/16



10 MAT



7 oz. Frequency + 2 oz. Detail + 32 oz. Arsenal + 1% MSO

Resistance Management

While weed resistance to protoporphyrinogen-oxidase inhibiting herbicides is relatively infrequent, populations of resistant biotypes are known to exist. Resistance management practices include:

1. Following labeled application rate and weed growth stage recommendations
2. Avoiding repeated applications of herbicides with the same mode of action
3. Using tank mixes and sequential applications with other effective herbicides possessing different modes of action

Rotate modes of action after 2 years

Kochia Control

Canyon County, ID

Appl 7/29/16

2.5 WAT



2 oz Detail + 2 qts Aquastar

Herbicide Resistance

Repeated applications of a single mode of action in a weed management plan increase the probability of selecting for naturally occurring biotypes* with less susceptibility to herbicides using that mode of action. Therefore,

Frequency should be tank mixed with a herbicide having a different mode of action and/or be used in a rotation with herbicides having a different mode of action.

*A weed biotype is a naturally occurring individual within a given species that has a slightly different but distinct genetic makeup from other plants.

Rotate modes of action after 2 years

Table 1. Broadleaf Weeds Controlled
(4 to 16 fl ozs/A)

| Broadleaf Weeds | Maximum Size ^a (Inches) |
|---------------------------|---------------------------------------|
| Amaranth, Palmer | 6 |
| Amaranth, Powell | 6 |
| Burcucumber | 6 |
| Carpetweed | 6 |
| Chickweed, common | 4 |
| Cocklebur, common | 8 |
| Dandelion | 6 |
| Gallinsoga, hairy | 6 |
| Horseweed (Marestail) | 6 |
| Jimsonweed | 6 |
| Kochia | 6 |
| Lambsquarters, common | 6 |
| Mallow, common | 3 |
| Mallow, Venlos | 3 ^a |
| Morningglory spp. | 6 ^a |
| Mustard spp. | 6 |
| Nightshade, black | 6 |
| Nightshade, Eastern black | 6 |
| Nightshade, hairy | 6 |
| Pigweed, prostrate | 6 |
| Pigweed, redroot | 6 |
| Pigweed, smooth | 6 |
| Pigweed, tumble | 4 |
| Prickly lettuce | 4 |
| Ragweed, common | 6 |
| Ragweed, giant | 8 |
| Shepherd's purse | 4 |
| Sida, prickly | 3 |
| Smartweed, ladysthumb | 3 |
| Smartweed, Pennsylvania | 3 |
| Sunflower, volunteer | 8 |
| Sunflower, wild (common) | 8 |
| Thistle, Canada | 6 ^a |
| Thistle, Russian | 4 |
| Velvetleaf | 8 |
| Waterhemp, common | 6 |
| Waterhemp, tall | 6 |
| White clover | 3 |

^a For best control, apply before weeds reach maximum size.

^b Growth suppression only

Table 2. Grass Weeds Controlled
(4 to 16 fl ozs/A)

| Grass Weeds | Maximum Leaf Stage ¹ | Maximum Size ^a (Inches) |
|--------------------------|---------------------------------|---------------------------------------|
| Barryardgrass | 4 | 4 |
| Crabgrass, large | 4 | 3 |
| Crabgrass, smooth | 4 | 3 |
| Cupgrass, woolly | 3 | 3 |
| Dallisgrass ² | 3 | 3 |
| Foxtail, giant | 4 | 4 |
| Foxtail, green | 3 | 3 |
| Foxtail, yellow | 3 | 3 |
| Goosegrass | 4 | 3 |
| Johnsongrass, seedling | 3 | 4 |
| Millet, wild proso | 3 | 3 |
| Panicum, fall | 3 | 3 |
| Shattercane | 3 | 4 |
| Signalgrass, broadleaf | 3 | 3 |
| Sprangletop | 3 | 3 |

¹ For best control, apply before weeds reach maximum size or leaf stage.

² Growth suppression only

Additional Species Can Be Added

- **Bermudagrass***
- **KR Bluestem**
- **Chlorisgrass**
- **Crowsfoot grass**
- **Mexican sprangletop**
- **Western Ragweed**
- **Silverleaf nightshade**



Note: Requires multiple applications alone or a tank-mix with Arsenal PowerLine

Detail Utility R/W Results

Minnesota

11 MAT



2 oz. Detail + 1% MSO 50 gpa
Applied June 2016

Application Methods and Equipment

1. Maximum rate per acre per year
2. Coverage
3. Application Methods
4. Spray Drift Management
5. Managing Off Target Movement

Application Instructions

Detail may be applied in a single application or sequentially with an interval of 14 days or more.

Application Rates

Application rates for **Detail** when applied alone, in tank mix, or sequentially are given in **Table 3**. **DO NOT** apply more than a maximum cumulative amount of 6 fl ozs/A of **Detail** per year.

Application Methods and Equipment

Detail may be applied by ground or air. Good spray coverage is important for optimum weed control and can be improved with proper adjuvant, nozzle, and spray volume selection.

Use and configure application equipment to provide an adequate spray volume, an accurate and uniform distribution of spray droplets over the treated area, and to avoid spray drift to nontarget areas. Equipment should be adjusted to maintain continuous agitation during spraying with good mechanical or bypass agitation. Avoid overlaps that will increase rates above the use rates specified in this label.

Need for Complete Coverage with Detail



2 oz. Detail + 1% MSO 50 gpa
Applied June 2016
11 MAT



2 oz. Detail + 2 qts Glyphosate 10 gpa
Applied in July 2016
1 WAT

Spray Drift Management

Spray Drift

DO NOT apply when weather conditions may cause drift to adjacent crops and vegetation; injury may result if this occurs. To avoid spray drift from treated areas, **DO NOT** make applications when wind speed exceeds 10 mph or during periods of temperature inversions. Use of larger droplet sizes will reduce spray drift. Agriculturally approved drift-reducing additives may also be used.

Managing Off Target Movement

Application Height

Making applications at the lowest possible height (aircraft, 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 upwind and downwind edges of the field, 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 to 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 that 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

Other Information

1. Additives
2. Mixing
 1. Instructions
 2. Compatibility
 3. Order
3. Tank-mix information
4. Restrictions and Limitations
5. Use site specific information
6. Conditions of Sale and Warranty

Adjuvants / Additives

ADJUVANTS

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

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

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

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

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

Impact of No MSO

8 oz. Frequency + 2 oz. Detail + 12 oz. Plateau
Applied May 2016



3 WAT



Mixing

Mixing Instructions

Fill the spray tank until it is approximately 1/2 full with clean water. Shake the **Frequency** container well; then slowly add **Frequency** to the spray tank while agitating. Agitation must be engaged before adding the product to obtain a complete and uniform mixture of **Frequency**.

Limit the amount of spray mixture prepared to that needed for immediate use.

Mixing Order

Use only water as a carrier.

Water

1. Fill the spray tank 1/2 to 3/4 full with clean water.
2. Add the required amount of **Frequency** to the spray tank while agitating.
3. After **Frequency** has visibly dispersed, add spray additives and fill the remainder of the tank with water.

Tank Mix Preparation

Tank Mix Preparation

When tank mixing **Frequency® herbicide** with registered herbicides, add the other herbicides and other components in the following order while agitating:

1. Fill spray tank 1/2 to 3/4 full with clean water.
2. Add soluble-packet products and thoroughly mix.
3. Add **Frequency** and thoroughly mix.
4. Add WP (wetable powder), DG (dispersible granule), DF (dry flowable), or LF (liquid flowable) formulations.
5. Add EC (emulsifiable concentrate) products.
6. Add spray adjuvants to the spray tank.
7. While agitating, fill the remainder of the tank with water.

Tank Mix Preparation

WALES

- ☐ Wettable powders and water dispersible granules
- ☐ Agitate
- ☐ Liquid flowable and suspensions
- ☐ Emulsifiable concentrates and EC formulations
- ☐ Surfactants

Tank Mixes For Specific Uses

Bareground

Frequency can be used as part of a program for non-selective vegetation control to maintain bareground in noncrop areas that must be kept weed free such as railroad, utility, highway, and pipeline rights-of-way; highway guardrails, delineators, and sign posts; utility substations, petroleum tank farms, pumping installations, fence rows, storage areas, farmyards and around farm buildings and nonirrigation ditchbanks.

Frequency offers residual and postemergence control of susceptible annual broadleaf and grass weeds. Adequate moisture is necessary to activate **Frequency**. Dry weather following application may reduce effectiveness. The actual length of residual control is dependent on factors such as soil type, organic matter, weed pressure, and rainfall amounts after application.

Preemergence Application

Apply **Frequency** at 4 to 16 fl ozs/A before weed emergence to control susceptible weeds listed in **Table 1** and **Table 2**. For best performance, tank mix **Frequency** with other residual herbicides such as **Arsenal® PowerLine™ herbicide**, **Journey® herbicide**, **Pendulum® AquaCap™ herbicide**, **Plateau® herbicide**, or diuron.

Early Postemergence Application

For areas where weed emergence has already occurred, apply **Frequency** at 4 to 16 fl ozs/A before weeds reach the maximum size or leaf stage listed in **Table 1** and **Table 2**. Postemergence application of **Frequency** requires the use of an adjuvant to achieve optimum weed control (see **Additives** section). To increase postemergence spectrum, **Frequency** can be tank mixed with **Roundup®** (glyphosate). For best residual effects, tank mix with **Arsenal PowerLine**, **Journey**, **Pendulum AquaCap**, **Plateau**, or diuron (refer to respective labels for appropriate use rates).

Tank Mixes For Specific Uses

7 oz. Frequency + 2 qts. Glyphosate + 7 oz. Milestone

Applied May 2017 - 1 MAT



5 MAT



Specific Use Directions

FOR WEED CONTROL IN PASTURE AND RANGELAND

For the control of undesirable weeds in pasture and rangeland (see "GUIDELINES FOR RANGELAND USE" section), apply **Plateau** at 2 to 12 oz. per acre as a broadcast treatment or as a 0.25% to 1% solution with 1.0% MSO for spot treatments. See appropriate sections of this label for specific use directions.

GUIDELINES FOR RANGELAND USE

Plateau 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 **Plateau** 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.

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

Plateau should only be applied to a given rangeland acre as specific weed problems arise. For the control of annual weed species such as cheatgrass, downy brome and medusahead rye, a single application of **Plateau** that coincides with the successful establishment and/or release of desirable rangeland vegetation and the use of available IPM can provide effective, sustainable control of the annual weed problem. For difficult to control perennial weed species such as leafy spurge, dalmatian toadflax and Russian knapweed, a single broadcast application of **Plateau® herbicide** should be effective in most cases. If needed, spot treatments with **Plateau** can be used to control any remnant plants or new seedlings that may emerge. Long term control of undesirable weed species ultimately depends on the successful use of land management practices that promote the growth and sustainability of desirable rangeland plant species.

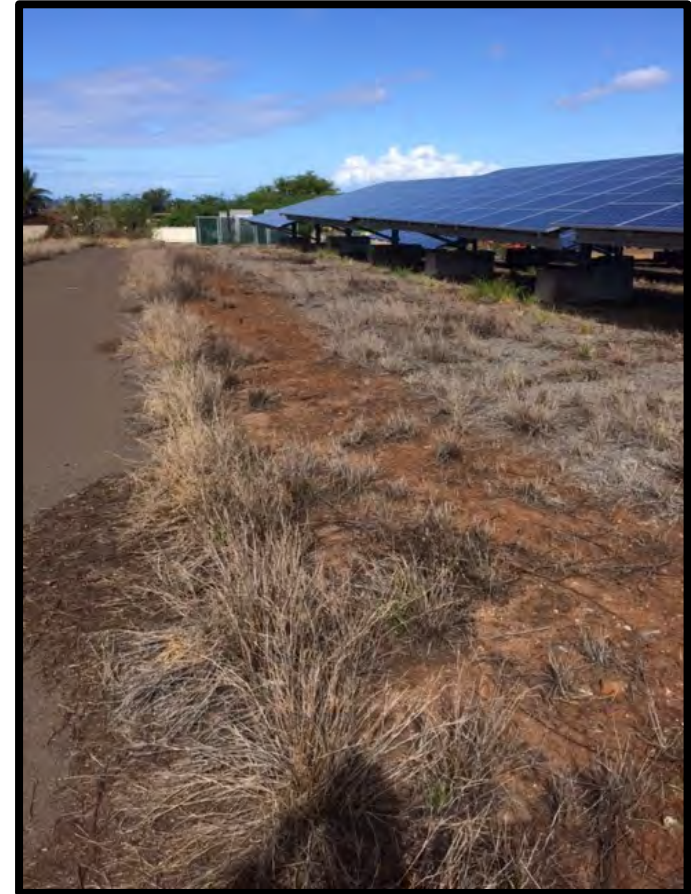


Restrictions and Limitations

Restrictions and Limitations

- **DO NOT** apply more than 16 fl ozs **Frequency** (0.35 lb topramezone) per acre during the year.
- **DO NOT** apply to areas that can be grazed or cut for hay.

8 oz. Frequency + 2 oz. Detail + 48 oz. Arsenal Powerline + 1% MSO



Use Up To Date Labels!

Leafy Spurge Control

Detail applied in tank mixture with **Plateau** will control leafy spurge when applied late spring/early summer in non-cropland areas as described above. This tank mixture will also control additional weeds listed on the respective **Detail** and **Plateau** labels. **Detail** plus **Plateau** tank mix may be applied by ground or air.

Apply **Detail** at 1.0 to 2.0 fl ozs/A plus **Plateau** at 4.0 to 6.0 fl ozs/A to leafy spurge when it reaches the yellow bract (pre-bloom) stage in late spring/early summer.

DO NOT apply this tank mix as a fall application because resultant control may not be satisfactory.

DO NOT feed or allow animals to graze areas of grass treated with **Detail** within 365 days of treatment.

New Label

Pasture and Rangeland

Use not permitted in California on pasture and rangeland unless otherwise directed by supplemental labeling.

Detail herbicide may be applied for broadleaf weed control (refer to **Table 1** and **Table 2** for list of weeds controlled) in perennial cool-season and warm-season forage grasses grown in pastures or rangeland or Federal Conservation Reserve Program (CRP) land for livestock grazing.

Before applying **Detail herbicide** to forage grasses, verify the selectivity of **Detail herbicide** on your variety with your local seed company (supplier) to help avoid potential injury to sensitive varieties.

Conditions of Sale and Warranty

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

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BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF.

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ALWAYS READ AND FOLLOW LABEL DIRECTIONS!



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