

# **Notice of Weed Control Application**

Date of Application: February 13 - 17, 2024

# **Locations:**

- Charleston Blvd. 215 to Sky Vista Dr.
- <u>Desert Foothills Dr.</u> Charleston Blvd. to Alta Dr.

**Reason for Application:** Target weed control in planters, rock areas, tree wells, and cracks of sidewalks.

**Product Manufacturer Name:** Pendulum Aqua Cap.

- -EPA registration no. 241-416
- -Active ingredients: pendimethalin: N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine
- -Signal word: Caution
- -Precautionary statement: Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing.

# Pendulum® Aqua Cap

Herbicide

For use as a preemergence weed control herbicide in turfgrass, landscape or grounds maintenance, noncropland areas, and ornamental production

**Active Ingredient:** 

pendimethalin: N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	38.7%
Other Ingredients:	61.3%
Total:	00.0%

1 gallon contains 3.8 lbs of microencapsulated pendimethalin in an aqueous carrier.

EPA Reg. No. 241-416

**EPA Est. No.** 

# 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:** 



	FIRST AID
If in eyes	<ul> <li>Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
	HOTLINE

Have the product container or label with you when calling a poison control center or doctor or going for treatment. In case of an emergency endangering life or property involving this product, call day or night, 1-800-832-HELP (4357).

# **Precautionary Statements**

## **Hazards to Humans and Domestic Animals**

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

# Personal Protective Equipment (PPE)

# Applicators and other handlers must wear:

- · Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks

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

# **Engineering Controls**

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [(40 CFR 170.240)(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

#### **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. Wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

# **Environmental Hazards**

This product is toxic to fish. **DO NOT** apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. DO NOT contaminate water when disposing of equipment washwaters or rinsate.

Non-target Organism Advisory Statement: This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators. in areas adjacent to the treated site. Protect the forage and habitat of non-target organisms by following label directions intended to minimize spray drift.

# **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 through any type of irrigation system.

BASF Corporation does not recommend or authorize the use of this product in manufacturing, processing or preparing custom blends with other products for application to turf or ornamentals.

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 requirements specific to your state or tribe, consult the state or tribal agency responsible for pesticide regulation.

DO NOT apply Pendulum® AquaCap herbicide in greenhouses, shadehouses, or other enclosed structures.

Not for use for commercial seed production.

### **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 **24 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
- Shoes plus socks

# 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.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL OR CROP INJURY.

### STORAGE AND DISPOSAL

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

# **Pesticide Storage**

**DO NOT** store below 15° F. Extended storage at temperatures below 15° F can result in the formation of crystals on the bottom of container. If crystallization does occur, store the container on its side at room temperature (70° F) and rock occasionally until crystals dissolve.

# Pesticide Disposal

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

# **Container Handling**

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

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

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

# STORAGE AND DISPOSAL (continued)

# **Container Handling** (continued)

**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. 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.

#### **Product Information**

**Pendulum® AquaCap herbicide** controls most annual grasses and certain broadleaf weeds as they germinate. When susceptible weeds germinate in the treated area, they contact the herbicide and both shoot and root growth stops. Translocation of the herbicide within the plant is limited. Affected weeds die shortly after growth is stopped, usually before emergence from the soil.

### **Mode of Action**

Pendimethalin, the active ingredient in **Pendulum AquaCap**, is a **Group 3 (WSSA)/Group K<sub>1</sub> (HRAC)** herbicide belonging to the dinitroaniline chemistry class. **Pendulum AquaCap** is a meristematic inhibitor that interferes with meristematic plant cell division or mitosis inhibiting germinating seedling growth.

# **Herbicide Resistance Management**

While weed resistance to **Group 3** herbicides is infrequent, populations of resistant biotypes are known to exist. Weeds resistant to **Group 3** herbicides should be managed using herbicide(s) from a different group (mode or site of action) that are effective against the target weeds. Resistance management should be part of a diversified weed control strategy that integrates chemical, cultural, and mechanical (tillage) control tactics. Consult your local BASF representative, state cooperative extension service, professional consultants, or other qualified authority to determine appropriate actions if you suspect resistant weeds.

### **Chemical Control**

- Start clean with mechanical control measure or an effective burndown herbicide program.
- DO NOT rely on a single herbicide site of action for weed control.
- Follow labeled application rate and weed growth stage specifications.
- Avoid application of herbicides with the same site of action more than twice a season.
- Use tank mixes and sequential applications with other herbicides possessing different sites of action that are also effective on the target weeds.

# **Scouting and Containment**

- Scout treated areas after herbicide application to identify areas where weed control was ineffective.
- Control weed escapes with herbicides possessing a different site of action or use a mechanical control measure. Weed escapes should not be allowed to reproduce by seed or to proliferate vegetatively.
- Contact your **Pendulum AquaCap** supplier and/or your local BASF representative to report weed escapes.
- Clean equipment before moving to a different treatment area to avoid spread of resistant weeds.

# **Weeds Controlled**

Pendulum AquaCap will not control established weeds. If weeds germinate before herbicide activation, shallow cultivate to destroy existing weeds or, where practical, remove by hand. When cultivating for any reason, it should be shallow. Use Pendulum AquaCap with herbicides registered for postemergence application (i.e. Roundup® herbicide or Finale® herbicide) for the control of established weeds. DO NOT apply sprays containing Roundup or Finale over the top of desirable plants. A Pendulum AquaCap treatment may be followed by any registered herbicide to control weeds not listed on the Pendulum AquaCap label.

The efficacy of **Pendulum AquaCap** will be improved if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. Erratic weed control may result if **Pendulum AquaCap** is not activated by rainfall or irrigation within 30 days.

The following grass and broadleaf weeds are controlled by preemergence treatments of **Pendulum AquaCap** at the specified rates.

**Table 1. Weeds Controlled** 

Common Name	Scientific Name
Grasses	
Barnyardgrass	Echinochloa crus-galli
Bluegrass, annual	Poa annua
Crabgrass	Digitaria spp.
Crowfootgrass	Dactyloctenium aegyptium
Foxtail, giant	Setaria faberi
Foxtail, green	Setaria viridis
Foxtail, yellow	Setaria glauca
Goosegrass	Eleusine indica
Itchgrass	Rottboellia exaltata
Johnsongrass (from seed)	Sorghum halepense
Junglerice	Echinochloa colona
Lovegrass (from seed)	Eragrostis spp.
Panicum, browntop	Panicum fasciculatum
Panicum, fall	Panicum dichotomiflorum
Panicum, Texas	Panicum texanum
Sandbur, field	Cenchrus incertus
Signalgrass	Brachiaria platyphylla
Sprangletop, Mexican	Leptochloa uninervia
Sprangletop, red	Leptochloa filiformis
Witchgrass	Panicum capillare
Woolly cupgrass	Eriochloa villosa
Broadleaf Weeds	
Burweed, lawn	Soliva pterosperma
Carpetweed	Mollugo verticillata
Chickweed, common	Stellaria media
Chickweed, mouseear	Cerastium vulgatum
Clover, hop	Trifolium procumbens
Cudweed	Gnaphalium spp.
Evening primrose	Oenothera biennis
Fiddleneck	Amsinckia intermedia
ilaree	Erodium spp.
Henbit	Lamium amplexicaule
Knotweed, prostrate	Polygonum aviculare
Kochia	Kochia scoparia
ambsquarters.	Chenopodium album
Pigweed	Amaranthus spp.
Puncturevine	Tribulus terrestris
Purslane	Portulaca oleracea
Pusley, Florida	Richardia scabra

Table 1. Weeds Controlled (continued)

Common Name	Scientific Name		
Broadleaf Weeds (continued)			
Rocket, London	Sisymbrium irio		
Shepherdspurse	Capsella bursa-pastoris		
Smartweed, Pennsylvania	Polygonum pensylvanicum		
Speedwell, corn	Veronica arvensis		
Spurge, annual	Euphorbia spp.		
Spurge, prostrate	Chamaesyce humistrata		
Woodsorrel, yellow	Oxalis stricta		
Velvetleaf (Buttonweed)	Abutilon theophrasti		

# **Application Use Sites**

Use **Pendulum® AquaCap herbicide** for preemergence control of grass and certain broadleaf weed species as they germinate **in any turfgrass site** (golf courses, lawns, sod farms and other turf areas) and **landscape ornamental maintenance areas**. Examples of such sites include, but are not limited to: grounds or lawns around residential and commercial establishments, multifamily dwellings, military and other institutions, parks, airports, roadsides, schools, picnic grounds, athletic fields, houses of worship, cemeteries, golf courses, prairie grass areas, and sod farms.

**Pendulum AquaCap can be applied for general grounds maintenance** in areas such as parking lots, driveways and roadsides, alleyways, bike and jogging paths, vacant lots, buildings, stone gardens and gravel yards, markers and fence lines, and mulch beds. It may be used under asphalt or concrete treatments as part of a site preparation program.

Use **Pendulum AquaCap** for preemergence control of most annual grasses and certain broadleaf weeds as they germinate **in any noncropland area** such as railroad, utility, highway, and pipeline rights-of-way; highway guardrails, delineators, and sign posts; bridge abutments and approaches; utility substations; petroleum tank farms; pumping installations; storage areas; fence rows; windbreaks and shelterbelts; paved or gravel surfaces; and established wildflower plantings where weed control is desired.

Pendulum AquaCap can also be used in bulb plantings, nonbearing fruit and nut tree nurseries, conifer and hardwood seedling nurseries, and tree plantations for site preparation and maintenance.

Applications can be made, but are not limited to, plant species listed on this label such as trees, shrubs, ground-covers, perennials, bulbs, ornamental grasses, and bedding plants.

Pendulum AquaCap can be used in and around field, liner, and container ornamental production.

# **Application Instructions**

Pendulum® AquaCap herbicide will not control established weeds. Therefore, areas to be treated should be free of established weeds at the time of treatment, or Pendulum AquaCap may be used with herbicides registered for postemergence use in managed turf sites, landscape ornamentals, and in other noncropland areas. Consult the labels of those herbicides for suggested treatments, rates, and precautions or restrictions for use in these areas. The efficacy of Pendulum AquaCap will improve if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. If Pendulum AquaCap is not activated by rainfall or irrigation within 30 days, erratic weed control may result.

Applied according to label directions and under normal growing conditions, **Pendulum AquaCap** or **Pendulum AquaCap** tank mix combinations will not cause crop injury. Overapplication can result in crop stand loss, crop injury, or soil residues. Uneven application can decrease weed control or cause crop injury.

Seedling diseases, cold weather, excessive moisture, high soil pH, high soil salt concentration, or drought can weaken seedlings and plants and increase the possibility of plant damage from **Pendulum AquaCap**.

# **Mixing Instructions**

**Pendulum AquaCap** may be applied in a tank mix or a sequential application with other herbicides registered for use in a given crop. Refer to the companion label for weeds controlled in addition to **Pendulum AquaCap** alone.

When using tank mixtures or sequential applications with **Pendulum AquaCap**, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

Fill tank 1/2 to 3/4 full with clean water or liquid fertilizer and agitate. Before mixing **Pendulum AquaCap** or **Pendulum AquaCap** tank mixtures in liquid fertilizer, refer to appropriate label sections for recommended uses in liquid fertilizer, application instructions, and compatibility determinations.

# Pendulum AquaCap Alone

When using **Pendulum AquaCap** alone, add **Pendulum AquaCap** to the partially filled tank while agitating; then fill the remainder of the tank with water or liquid fertilizer.

# **Pendulum AquaCap Tank Mixes**

Add the tank mixture ingredients in the following order:

 Wettable Powder (WP) formulations - Make a slurry of the WP in water (1:2 ratio). Add the slurry slowly into the partially filled tank while agitating.

- Dry Flowable/Water Dispersible Granule
   (DF/WDG) formulations Add the granules to the partially filled tank while agitating. Make a slurry of the granules in water before adding to liquid fertilizer.
- 3. **Flowable (F) formulations** Add the F formulation to the partially filled tank while agitating.
- 4. Add **Pendulum AquaCap** to the partially filled tank while agitating.
- Water-soluble Concentrate (WSC) formulations -Add the WSC formulation to the partially filled tank while agitating.
- Emulsifiable Concentrate (EC) formulations Add the EC formulation to the partially filled tank while agitating.

Fill the remainder of the tank with water or liquid fertilizer while agitating.

Maintain continuous agitation while adding herbicides and until spraying is completed. If the spray mixture is allowed to settle for any period of time, thorough agitation is essential to resuspend the mixture before spraying is resumed.

# **Backpack Sprayer**

Begin with a clean spray tank. Fill the spray tank 1/2 full with clean water and add the required amount of **Pendulum AquaCap** to the sprayer. Cap sprayer and agitate to ensure mixing. Uncap sprayer and finish filling tank to desired level. Cap sprayer and agitate once again. During application it is desirable to agitate the mixture on occasion to ensure mixing. If the spray mixture is allowed to settle for any period of time, thorough agitation is essential before spraying is resumed.

# **Liquid Fertilizers**

Before mixing, always test small quantities with a simple jar test. Add the required amount of **Pendulum AquaCap** to a half-filled spray tank while agitating; then add the fertilizer product. Complete filling spray tank to desired level.

# **Spraying Instructions**

Avoid unintentional contact of spray solution with driveways, stone, wood, or other porous surfaces. Rinse immediately with water to avoid staining. Avoid mechanically scrubbing until surface area is thoroughly rinsed. Treated turfgrass should be dry before entering to avoid staining onto nontreated surfaces.

# **Ground Application (spray boom)**

Uniformly apply with properly calibrated ground equipment in sufficient water per acre to uniformly treat the area with a spray pressure of 25 to 50 psi. Suggested spray volumes are 20 to 200 gpa for professional turfgrass, landscape and ornamental applications, and 10 to 200 gpa for all other noncrop applications such as roadsides, utility rights-of-way, or soft-residual bareground applications. Maintain continuous agitation during spraying with good mechanical or bypass agitation. Avoid overlaps that will increase rates above those specified.

# **Ground Application (hand-held equipment)**

Use **Table 2** or **Table 3** to determine the amount of **Pendulum® AquaCap herbicide** to apply per 1,000 square feet of treated area. The amount of water used for the application is not critical but should be sufficient for thorough coverage without runoff. Calibration of backpack or other hand-held equipment will vary with each operator. Determine the amount of water needed to treat 1,000 square feet before mixing the spray solution. Follow information in **Mixing Instructions** section of this label.

# **Aerial Application**

Uniformly apply in 5 or more gallons of water per acre.

# **Spray Drift Management**

# **Ground Application (spray boom)**

- Applicators must only apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or plant canopy.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- **DO NOT** apply when wind speeds exceed 15 mph at the application site.
- DO NOT apply during temperature inversions.

# **Ground Application (hand-held)**

Take precautions to minimize spray drift.

# **Spray Drift Management**

# **Aerial Application**

- DO NOT release spray at a height greater than 10 feet above the ground or plant canopy, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- **DO NOT** apply when wind speeds exceed 15 mph at the application site. If the wind speed is greater than 10 mph, the boom length must not exceed 65% of the wingspan for fixed wing aircraft or 75% of the rotor diameter for helicopters. Otherwise, the boom length must not exceed 75% of the wingspan for fixed wing aircraft or 90% of the rotor diameter for helicopters.
- Applicators must use 1/2 swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- DO NOT apply during temperature inversions.

# Spray Drift Advisories

The applicator is responsible for avoiding off-site spray drift. Be aware of nearby non-target sites and environmental conditions.

# Importance of Droplet Size

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

# **Controlling Droplet Size - Ground Boom**

- Volume Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

# **Controlling Droplet Size - Aircraft**

Adjust Nozzles - Follow nozzle manufacturer's recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

# **Boom Height - Ground Boom**

For ground equipment, the boom should remain level with the plants and have minimal bounce.

# Release Height - Aircraft

Higher release heights increase the potential for spray drift.

# **Shielded Sprayers**

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

### **Temperature and Humidity**

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

# **Temperature Inversion**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or 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. Avoid applications during temperature inversions.

# Wind

Drift potential generally increases with wind speed. **AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.** 

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

# **Turfgrass**

Use **Pendulum® AquaCap herbicide** for preemergence control of grasses and certain broadleaf weed species as they germinate in any turfgrass site (golf courses, lawns, sod farms and other turf areas) and landscape ornamental maintenance areas. Examples of such sites include, but are not limited to: grounds or lawns around residential and commercial establishments, multifamily dwellings, military and other institutions, parks, airports, roadsides, schools, picnic grounds, athletic fields, houses of worship, cemeteries, golf courses, prairie grass areas, and sod farms.

The efficacy of **Pendulum AquaCap** will be improved if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. If **Pendulum AquaCap** is not activated by rainfall or irrigation within 30 days, erratic weed control may result.

To prevent establishment of weeds along the edges of treated area, it may be necessary to overlap the spray 3 to 6 inches onto sidewalks or driveways, etc., to ensure effective application rates in these especially vulnerable sites. Where temporary discoloration of pavement is to be avoided, **DO NOT** rub or scrub surface. Rinse area immediately using a heavy spray of water to avoid staining. Treated turfgrass should be dry before entering to avoid staining onto nontreated surfaces.

# **Turfgrass Tank Mixes**

**Pendulum AquaCap** can be mixed with postemergence herbicides to control emerged weeds in nonresidential turfgrass. For annual grass control, applications can be made with **Drive® 75 DF herbicide**, **Drive® XLR8 herbicide**, or MSMA to control emerged weeds.

Broadleaf weeds can be controlled using **Trimec® herbicide**, **Three-Way<sup>™</sup> herbicide**, 2-4,D and other similar products.

Before tank mixing, use a simple jar test to ensure compatibility of herbicides.

Refer to manufacturer's labels for specific use directions, precautions, and limitations before tank mixing with **Pendulum AquaCap**. Follow those that are most restrictive.

# **Turfgrass Restrictions**

- Use on well-established turfgrass with a dense and uniform stand. On turf that has been thinned or damaged due to winter injury, excessive moisture, etc., allow for turf recovery before application.
- On newly planted areas, application should not be made until the turfgrass has filled in and has been mowed at least four times. Applications made to overseeded warm-season turfgrass may cause thinning or injury of the overseeded species.
- DO NOT use on bentgrass or Poa annua greens and tees or injury may occur.

- Delay reseeding or winter overseeding treated turfgrass for at least three (3) months following the last **Pendulum** AquaCap application.
- Delay sprigging turfgrass for five (5) months after application.

Table 2. Pendulum® AquaCap herbicide Residential, Golf Course, Commercial, and Other Nonresidential Turfgrass Uses for Preemergence Weed Control¹

Cool Season Turfgrass	Weed	Product per 1,000 sq ft (fl ozs)	Product per acre (pts)	Comment	
Bluegrass, Kentucky Fescue, fine Fescue, tall Ryegrass, perennial	barnyardgrass	All Turf Uses:		Apply a repeat application of 2.2 to	
	crabgrass evening primrose	1.1 to 1.6	3.1 to 4.2	3.1 pts/A (0.86 to 1.1 fl ozs/ 1,000 sq ft) after 5 to 8 weeks for	
	fall panicum foxtail hop clover knotweed oxalis Poa annua prostrate spurge purslane	Initial application before weed germination in spring		extended control or where heavy weed infestations are expected.	
	goosegrass	Residential a Turf Use		Apply a repeat application of 3.1 pts/A (1.1 fl ozs/1,000 sq ft) if the	
		1.1 to 1.6	3.1 to 4.2	lower rate was used initially or for extended goosegrass control after	
		Golf Course, and Other No Turf Use	onresidential	5 to 8 weeks.	
		1.1 to 2.3	3.1 to 6.3		
		Initial application before weed germination in spring			
	chickweed corn speedwell cudweed henbit lawn burweed Poa annua	All Turf Uses:		Apply in late summer or early fall	
		1.1 to 1.6	3.1 to 4.2	before weed germination. Apply a repeat application of 3.1 to 4.2 pts/. (1.1 to 1.6 fl ozs/1,000 sq ft) after 5 to 8 weeks for extended Poa annua control.	
Bentgrass or established <i>Poa annua</i> <sup>3</sup>	barnyardgrass crabgrass evening primrose fall panicum	All Turf Uses (Non-greens and Tees):		Apply a repeat application of 2.2 to 3.1 pts/A (0.86 to 1.1 fl ozs/	
(1/2-inch high or taller)		1.1	3.1	1,000 sq ft) after 5 to 8 weeks for extended control or where heavy	
	foxtail hop clover knotweed oxalis Poa annua prostrate spurge purslane	Initial applicatio germinatior		weed infestations are expected.	
	goosegrass	All Turf Uses (Non-greens and Tees):		Apply a repeat application of 3.1 pts/A (1.1 fl ozs/1,000 sq ft) for	
		1.1	3.1	extended goosegrass control after	
		Initial application before weed germination in spring		5 to 8 weeks.	
	chickweed corn speedwell	All Turf Uses (Non-greens and Tees):		Apply in late summer or early fall before weed germination.	
	cudweed henbit lawn burweed <i>Poa annua</i>	1.1 to 1.6	3.1 to 4.2		

Table 2. Pendulum® AquaCap herbicide Residential, Golf Course, Commercial, and Other Nonresidential Turfgrass Uses for Preemergence Weed Control¹ (continued)

Warm Season Turfgrass	Weed	Product per 1,000 sq ft (fl ozs)	Product per acre (pts)	Comment
Bahiagrass Bermudagrass	barnyardgrass crabgrass evening primrose fall panicum foxtail hop clover knotweed	Residential and Sod Farm Turf Uses Only:		Apply a repeat application of 2.2 to 3.1 pts/A (0.86 to 1.1 fl ozs/
Buffalograss Centipedegrass		1.1 to 1.6	3.1 to 4.2	1,000 sq ft) after 5 to 8 weeks if
Fescue, tall Paspalum, seashore St. Augustinegrass		Golf Course, Commercial and Other Nonresidential Turf Uses Only:		necessary.
Zoysiagrass	oxalis Poa annua	1.1 to 2.3	3.1 to 6.3	7
	prostrate spurge	Initial applicatio germination		
	goosegrass	All Turf Uses (Non-greens and Tees):		An additional application of 3.1 pts// (1.1 fl ozs/1,000 sq ft) may be made
		1.1	3.1	for extended goosegrass control 8 weeks after the second
		Apply before weed germination in spring.		application.
		Make a second application at 3.1 pts/A (1.1 fl ozs/1,000 sq ft) 5 to 8 weeks later.		
	chickweed corn speedwell cudweed henbit lawn burweed Poa annua	All Turf Uses:		Apply in late summer or early fall
		1.1 to 1.6	3.1 to 4.2	before weed germination. Apply a repeat application of 3.1 to 4.2 pts/(1.1 to 1.6 fl ozs/1,000 sq ft) after 5 to 8 weeks for extended <i>Poa annua</i> control.

<sup>&</sup>lt;sup>1</sup> **DO NOT** exceed a maximum of 4.2 pints (2.1 quarts)/A or 1.6 fl ozs/1,000 sq ft product **per application** for use on residential and sod farm turfgrass. **DO NOT** exceed a maximum rate of 6.3 pints (3.1 quarts)/A or 2.3 fl ozs/1,000 sq ft product **per application** for use on golf course turfgrass, commercial, or other nonresidential turfgrass.

### **Weeds Controlled**

Pendulum AquaCap will not control established weeds. If weeds should germinate before activation of herbicide, shallow cultivate to destroy existing weeds or, where practical, remove by hand. When cultivating for any reason, it should be shallow. Pendulum AquaCap may be used with herbicides registered for postemergence application (i.e. Roundup® herbicide or Finale® herbicide) for control of established weeds. DO NOT apply sprays containing Roundup or Finale over the top of desirable plants. A Pendulum AquaCap treatment may be followed by any registered herbicide to control weeds not listed on the Pendulum AquaCap label.

# **Landscape and Grounds Maintenance**

**Pendulum AquaCap** can be incorporated into landscape and grounds maintenance programs to provide extended preemergence control of most annual grasses and certain broadleaf weeds. Areas to be treated, such as mulch beds, parking areas and roadsides, fencelines and borders, and around statuary or monuments, should be free of emerged weeds before application. To remove emerged weeds, either cultivate or tank mix **Pendulum AquaCap** with a postemergence product labeled for such use.

Not all ornamental species or cultivars of species can be tested for plant safety. Refer to the list of ornamental plant species found in this label (**Table 4. Tolerant Ornamental Species**). **Pendulum AquaCap** may be used on plant species not listed on this label; however, testing a small number plants at the specified rate and evaluating for suitability before a broad-use application is advised. Refer to **Table 3. Weed Control in All Nonturfgrass Sites** for application rates. Avoid unintentional contact of spray solution with stone, wood, or other porous surfaces because staining may occur. Rinse surfaces immediately using a heavy spray of water to avoid staining.

<sup>&</sup>lt;sup>2</sup>Residential is defined as turf in any residential situation as well as home lawns, schools, parks, and playgrounds.

<sup>&</sup>lt;sup>3</sup> **DO NOT** use on bentgrass or *Poa annua* greens or tees.

# Table 3. Weed Control in All Nonturfgrass Sites\*

For preemergence control of the weed species listed, apply **Pendulum® AquaCap herbicide** at the specified rates:

Length of Control (months)	Pendulum AquaCap (qts/A)	Required to Treat 1,000 sq ft (fl ozs)
Short term (2 to 4)	2.1	1.6
Long term (6 to 8)	4.2	3.2

<sup>\*</sup> For all turfgrass weed control rates, refer to **Table 2**. **Pendulum® AquaCap herbicide Residential, Golf Course, Commercial, and Other Nonresidential Turfgrass Uses for Preemergence Weed Control**.

For extended weed control, repeat applications of **Pendulum AquaCap** can be made.

# Ornamental Plantings and Tree Plantations including Noncropland Areas

Use **Pendulum AquaCap** for grounds maintenance in noncropland areas, for preemergence control of the weed species listed in and around established tree plantations for site preparation, and for maintenance of conifer and hardwood seedling nurseries and pulpwood and fiber farms. **Pendulum AquaCap** may be used for hardwood and conifer regeneration on conservation reserve program land. **Pendulum AquaCap** can also be used in Christmas trees and nonbearing fruit and nutcrops and vineyards established, or bulb and wildflower field plantings, in and around established ornamentals planted in noncropland areas such as highway rights-of-way and utility substations. Refer to **Table 3. Weed Control in All Nonturfgrass Sites** for application rates.

# Applications at Planting or to Established Trees

When applying at planting, it is important to achieve slit closure to prevent **Pendulum AquaCap** from directly contacting the tree roots or being washed into the root zone via the open slit, or root stunting may occur. Refer to **Landscape and Ornamental Plantings Instructions and Restrictions** chart before application.

For postemergence weed control, tank mix combinations of **Pendulum AquaCap** plus **Segment® herbicide**, **Roundup® herbicide**, **Finale® herbicide**, or other labeled herbicides are recommended. Refer to approved labeling for species recommendations. Determine rates for tank mix compounds from the product labels of **Pendulum AquaCap** and partner herbicides before use. Use caution to prevent combination sprays from direct contact with desirable foliage or injury may result. **Pendulum AquaCap** plus diuron or simazine

combinations will broaden weed control spectrum; however, use of combinations may restrict **Pendulum AquaCap** use in sensitive areas. Refer to manufacturer's labels for specific use directions, precautions, and limitations before application and follow those that are most restrictive.

#### **Ornamental Bulbs**

Pendulum AquaCap may be applied for control of susceptible annual weeds in ornamental bulbs listed in the Perennials section in Table 4. Tolerant Ornamental Species (crocus, daffodil [narcissus], gladiolus, lily, tulip, etc.). Apply Pendulum AquaCap before, during, or after bulb emergence. If weeds have already germinated, add a labeled postemergence herbicide to control emerged weeds.

#### Wildflowers

Pendulum AquaCap may be applied for control of susceptible annual weeds in plantings of wildflowers listed in the Perennials section in Table 4. Tolerant Ornamental Species. The perennial species noted¹ (black-eyed Susan, California poppy, coreopsis, oxeye daisy, etc.) have been evaluated for plant tolerance to applications of Pendulum AquaCap at 4.2 pints (2.1 quarts) per acre. Pendulum AquaCap may be applied to established perennial wildflowers before emergence of weeds or wildflowers. For wildflowers being established from seed, apply Pendulum AquaCap no sooner than 4 weeks after wildflowers have emerged, but before weed germination. If weeds have already germinated, add a labeled postemergence product to control emerged weeds. Refer to all label restrictions before application.

Due to the diversity of species and varieties that exist in areas where wildflowers are grown, the response to **Pendulum AquaCap** may vary greatly. Careful testing on desirable species is recommended to determine if areawide applications can be made.

# Nonbearing Fruit and Nutcrops and Vineyards

**Pendulum AquaCap** may be applied for preemergence control of most annual grasses and certain broadleaf weeds on the following nonbearing crops:

Almond	Grape	Pistachio
Apple	Nectarine	Plum
Apricot	Olive	Prune
Cherry	Peach	Walnut, English
Citrus	Pear	_
Fig	Pecan	

# **Noncropland**

Use **Pendulum AquaCap** for preemergence control of most annual grasses and certain broadleaf weeds as they germinate on 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, fence rows, storage areas, windbreaks and shelterbelts.

# Industrial (Unimproved) Turf

**Pendulum® AquaCap herbicide** will provide preemergence control of the annual grasses and broadleaf weeds listed in **Table 1. Weeds Controlled** that might germinate in established grass in rights-of-way, roadsides, construction sites, parks, substations, or lots.

Apply before weeds germinate. A postemergence herbicide such as 2,4-D, **Drive® 75 DF herbicide**, **Drive® XLR8 herbicide**, **Segment® herbicide**, MSMA, or similar products may be tank mixed to control established weeds. Apply according to label instructions for the respective products and follow the most restrictive wording.

# **Total Vegetation Control**

Pendulum AquaCap may be tank mixed with Arsenal® herbicide, Sahara® DG herbicide, Plateau® herbicide, Segment, Roundup PRO® herbicide, Karmex® herbicide, Finale® herbicide, Oust® herbicide, diuron, glyphosate or other products to provide bareground or total vegetation control. Pendulum AquaCap can be used to provide greater plant selectivity in areas where such action may be desired. Such sites might have roots of landscape vegetation, ornamentals, or desirable trees encroaching into the treated zone. Refer to tank mix partner labels regarding effects on desirable plants. DO NOT tank mix with Arsenal, Sahara DG, or Plateau herbicides in California.

Applications may be made to existing weeds controlled by the partner herbicide. Determine rates from the product labels before use. Follow the most restrictive label instructions.

For kochia control, combinations of **Pendulum AquaCap** with **Arsenal** or diuron are recommended if control has been a problem for other herbicides.

# Landscape and Ornamental Plantings Instructions and Restrictions<sup>1</sup>

Site	Application Instructions and Restrictions		
Landscape plantings <sup>2</sup>	DO NOT apply to newly transplanted ornamentals until plants have been watered and soil has been thoroughly packed and settled around roots.		
	Apply as a directed or over-the-top spray.		
	Use the lowest labeled rate when making applications to annuals.  Repeat applications can be made for extended landscape weed control.		
Ornamental bulbs <sup>3</sup>	Pendulum AquaCap may be applied to bulb species listed on the label.		
	2. Apply before bulb emergence.		

(continued)

# Landscape and Ornamental Plantings Instructions and Restrictions<sup>1</sup> (continued)

Site	Application Instructions and Restrictions
Wildflowers <sup>3</sup>	Pendulum AquaCap may be applied in plantings of wildflowers listed on the label. Refer to specific instructions for rate and plant tolerance.
	2. For wildflowers being established from seed, apply at 4 weeks after wildflowers have germinated, but before weed seed germination.
label into soil	ose desirable plant species listed on this treated the previous season with aquaCap or injury may occur.
<sup>2</sup> Before treatin	g a large number of plants, spray a few oserve for 1 to 2 months for plant damage

# Weeds Controlled

before full-scale application.

use treated plants for food or feed.

**Pendulum AquaCap** will not control established weeds. If weeds germinate before herbicide activation, shallow cultivate to destroy existing weeds or, where practical, remove by hand. When cultivating for any reason, it should be shallow.

<sup>3</sup> DO NOT treat plants grown for food or feed. DO NOT

Use **Pendulum AquaCap** with herbicides registered for postemergence application (i.e. **Roundup® herbicide** or **Finale**) for control of established weeds. **DO NOT** apply sprays containing **Roundup** or **Finale** over the top of desirable plants. A **Pendulum AquaCap** treatment may be followed by any registered herbicide to control weeds not listed on the **Pendulum AquaCap** label.

The efficacy of **Pendulum AquaCap** will be improved if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. Erratic weed control may result if **Pendulum AquaCap** is not activated by rainfall or irrigation within 30 days.

# **Commercial Ornamental Production**

# **Application Use Sites**

**Pendulum AquaCap** can be used in and around field, liner, and container ornamental production.

Pendulum AquaCap sprays are safe around and over the top of the established plants listed in **Table 4. Tolerant**Ornamental Species. However, not all varieties or strains of the plant species listed have been tested. Refer to ornamental instructions and restrictions in this label before any application of **Pendulum AquaCap**. Unintentional consequences such as crop injury may result because of certain environmental or growing conditions, manner of use, or application. Therefore, before treating a large number of plants, spray a few plants and observe for plant damage before full-scale application.

# **Application Instructions**

**Pendulum® AquaCap herbicide** will not control established weeds. Therefore, areas to be treated should be free of established weeds at the time of treatment, or use **Pendulum AquaCap** with herbicides registered for postemergence use in ornamentals and vegetation control sites. Consult the labels of those herbicides for suggested treatments, rates, and precautions or restrictions for use in these areas.

The efficacy of **Pendulum AquaCap** will improve if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. If **Pendulum AquaCap** is not activated by rainfall or irrigation within 30 days, erratic weed control may result.

Applied according to label directions and under normal growing conditions, **Pendulum AquaCap** or **Pendulum AquaCap** tank mix combinations will not cause crop injury. Overapplication can result in crop-stand loss, crop injury, or soil residues. Uneven application can decrease weed control or cause crop injury.

Seedling diseases, cold weather, excessive moisture, high soil pH, high soil salt concentration, or drought can weaken seedlings and plants and increase the possibility of plant damage from **Pendulum AquaCap**.

# Production Ornamentals Instructions and Restrictions<sup>1</sup>

Site	Application Instructions and Restrictions
Newly transplanted field-grown nursery stock <sup>2,3</sup>	DO NOT make over-the-top applications at time of field transplanting. Use shielded sprayer until plantings have been established for one (1) year or more in the field.
	2. <b>DO NOT</b> apply until transplants have been watered and soil has been thoroughly packed and settled around transplants. Take care to ensure there are no cracks in the soil where <b>Pendulum AquaCap</b> could come into contact with the roots.
	3. <b>DO NOT</b> apply during bud swell, bud break, or at time of first flush of new growth.
	Direct sprays away from grafted or budded tissue on transplants at all times.
Ornamental bulbs³	Pendulum AquaCap may be applied to bulb species listed on the label.
	2. Apply before bulb emergence.

(continued)

# Production Ornamentals Instructions and Restrictions<sup>1</sup> (continued)

	dira i i octi oti o i o (continued)
Site	Application Instructions and Restrictions
Newly transplanted container- grown nursery stock <sup>2,3</sup>	1. DO NOT apply until transplants have been watered and soil has been thoroughly packed and settled around transplants. Take care to ensure there are no cracks in the soil where Pendulum AquaCap could come into contact with the roots.  2. For container grown are contained.
	For container-grown ornamentals, delay first application of the product to bareroot liners for two (2) weeks after transplanting.
	3. <b>DO NOT</b> apply during bud swell, bud break, or at time of first flush of new growth.
	Direct sprays away from grafted or budded tissue on transplants at all times.
Established container or field-grown	DO NOT apply during bud swell, bud break, or at time of first flush of new growth.
nursery stock <sup>2,3</sup>	Apply as a directed or over-the-top spray.
	If newly budded or grafted rootstock, apply with a shielded sprayer.
	4. Take care to ensure there are no cracks in the soil where <b>Pendulum AquaCap</b> could come into contact with the roots.
Bareground for container placement	Apply to soil (including mulch, gravel, wood chips, or other permeable base); then water in. Replace containerized ornamentals onto pad.
Greenhouses, shadehouses, or other enclosed structures	<b>DO NOT</b> apply in greenhouses, shade-houses, or other enclosed structures.
label into soil tr	e desirable plant species listed on this reated the previous season with <b>uaCap</b> or injury may occur.
plants and obs before full-scal	1
	plants grown for food or feed. <b>DO NOT</b> nts for food or feed.

Refer to **Table 3. Weed Control in All Nonturfgrass Sites** for application rates.

# **Ornamental Tank Mixes**

Emerged weeds in ornamentals can be controlled using tank mixes containing Segment® herbicide, Roundup® herbicide, Finale® herbicide, Ornamec® herbicide, Gallery® herbicide, Princep® herbicide, and other similar products. DO NOT apply sprays containing Roundup or Finale over the top of ornamental plants.

Before tank mixing, use a simple jar test to ensure compatibility of herbicides.

Refer to manufacturer's labels for specific use directions, precautions, and limitations before tank mixing with **Pendulum® AquaCap herbicide**. Follow those that are most restrictive.

## **Christmas Tree Plantations**

Use **Pendulum AquaCap** in and around Christmas tree plantations. Apply **Pendulum AquaCap** at planting or to established trees. When applying at planting, it is important to achieve slit closure to prevent **Pendulum AquaCap** from directly contacting the tree roots or being washed into the root zone via the open slit or root stunting may occur.

For postemergence weed control, tank mix combinations of Pendulum AquaCap plus Segment, Roundup, **Finale**, or other labeled herbicides are recommended. Refer to approved labeling for species recommendations. Determine rates for tank mix combinations from the product labels of **Pendulum AquaCap** and partner herbicides before use. Use caution to prevent combination sprays from direct contact with desirable foliage or injury may result. Pendulum AquaCap plus diuron or simazine combinations will broaden weed control spectrum; however, use of combinations may restrict **Pendulum AquaCap** use in sensitive areas. Refer to manufacturer's labels for specific use directions, precautions, and limitations before application. Follow those that are most restrictive. Refer to Table 3. Weed Control in All Nonturfgrass Sites for **Pendulum AquaCap** application rates.

# Vegetation Control in Ornamental Production

Use **Pendulum AquaCap** for preemergence control of most annual grasses and certain broadleaf weeds as they germinate on noncropland areas such as sign posts, pumping installations, fence rows, storage areas, and windbreaks and shelterbelts. **Pendulum AquaCap** may be tank mixed with Segment, Roundup PRO® herbicide, Karmex® herbicide, Finale, diuron, glyphosate or other products to provide bareground or total vegetation control. **Pendulum AquaCap** can be used to provide greater plant selectivity in areas where such action may be desired. Such sites might have roots of landscape vegetation, ornamentals, or desirable trees encroaching into the treated zone. Refer to tank mix partner labels regarding effects on desirable plants. Applications may be made to existing weeds controlled by the partner herbicide. Determine rates from the product

labels before use. Follow the most restrictive label instructions. Refer to **Table 3. Weed Control in All Nonturfgrass Sites** for **Pendulum AquaCap** application rates.

## **Weeds Controlled**

Pendulum AquaCap will not control established weeds. If weeds germinate before herbicide activation, shallow cultivate to destroy existing weeds or, where practical, remove by hand. When cultivating for any reason, it should be shallow. Pendulum AquaCap may be used with herbicides registered for postemergence application (i.e. Roundup or Finale) for the control of established weeds. DO NOT apply sprays containing Roundup or Finale over the top of desirable plants. A Pendulum AquaCap treatment may be followed by any registered herbicide to control weeds not listed on the Pendulum AquaCap label.

The efficacy of **Pendulum AquaCap** will be improved if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. Erratic weed control may result if **Pendulum AquaCap** is not activated by rainfall or irrigation within 30 days.

**Pendulum AquaCap** may be used on plant species not listed on this label. Determine the suitability for such uses by treating a small number of such plants at the specified rate. Evaluate treated plants 1 to 2 months following treatment for possible injury.

Pendulum AquaCap sprays are safe around and over the top of the established plants listed in Table 4. Tolerant Ornamental Species. Refer to ornamentals instructions and restrictions before application. Refer to Table 3. Weed Control in All Nonturfgrass Sites for application rates.

Table 4. Tolerant Ornamental Species

Common Name	Scientific Name
Bedding Plants	
Ageratum	Ageratum houstonianum
Alyssum <sup>1</sup>	Alyssum saxatile
Anemone, poppy-flowered	Anemone coronaria
Artemesia	Artemesia spp.
Balloonflower	Platycodon grandiflorum
Begonia <sup>1</sup>	Begonia spp.
Cabbage, ornamental	Brassica olereacea
Caladium	Caladium spp.
Cast-iron plant	Aspidistra elatior
China aster¹	Callistephus chinensis
Crocosmia, montebretia	Crocosmia x crocosmiiflora
Dahlia¹	Dahlia spp.
Dianthus	Dianthus barbatus

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Bedding Plants (continued	3)
Dusty miller	Senecio cineraria
Gayfeather	Liatris spp.
Gazania, treasure flower	Gazania rigens
Gazania, trailing	Gazania rigens leucolaena
Gloxinia	Gloxinia simningia
Kale, ornamental	Brassica napus
Marigold, African	Tagetes erecta
Moss rose <sup>1</sup>	Portulaca grandiflora
Mum, garden	Chrysanthemum spp.
Periwinkle <sup>1</sup>	Vinca major
Periwinkle, rose	Catharanthus roseus
Petunia <sup>1</sup>	Petunia spp.
Plumosa cockscomb	Celosia cristata
Portulaca <sup>1</sup>	Portulaca grandiflora
Salvia <sup>1</sup>	Salvia splendens
Snapdragon	Antirrhinum majus
Statice <sup>1</sup>	Limonium spp.
Sweet William	Dianthus barbatus
Vinca <sup>1</sup>	Vinca major

<sup>&</sup>lt;sup>1</sup> Application of **Pendulum® AquaCap herbicide** should not be made sooner than four weeks after transplanting for these annuals. Use the lower labeled rate.

<b>Ground Covers</b>	
Ajuga	Ajuga reptans
Baby sun rose	Aptenia cordifolia
Beach strawberry	Fragaria chiloensis
Capeweed	Arctotheca calendula
Cinquefoil, spring	Potentilla verna
Coyotebrush, dwarf	Baccharis pitularis
Daisy, trailing African	Osteospermum fruticosum
Dymondia	Dymondia margaretae
Gazania	Gazania splendens
Iceplant, large leaf	Carpobrotus edulis
lvy, English	Hedera helix
lvy, geranium	Pelargonium peltatum
Jasmine, Asiatic	Trachelospermum asiaticum
Jasmine, primrose	Jasminum mesnyi
Jessamine, Carolina	Gelsemium sempervirens

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Ground Covers (continued	a)
Manzanita, bearberry	Arctostaphylos uva-ursi
Miscanthus	Miscanthus spp.
Mondograss	Ophiopogon japonica
Morningglory	Convolvulus spp.
Myoporum	Myoporum parviflolium
Pachysandra	Pachysandra terminalis
Potentilla	Potentilla fruticosa
Red apple	Aptenia cordifolia
Rosemary	Rosemarinus officinalis
Rose-of-Sharon	Hypericum calycinum
St. Johnswort, creeping	Hypericum calycinum
Sand strawberry	Fragaria chiloensis
Sedum	Sedum spurium
Stonecrop	Sedum spurium
Verbena, Peruvian	Verbena peruviana
Vervain	Verbena peruviana
Vetch, crown	Vicia sativa
Vinca	Vinca minor
Wintercreeper	Euonymous fortunei

<b>Ornamental Grasses</b>	
Beach grass	Ammophila breviligulata
Fescue, blue	Festuca ovina
Fescue, sheep	Festuca ovina
Fountain grass	Pennisetum setaceum
Pampas grass	Cortaderia selloana
Reed canary grass	Phalaris arundinacea
Reed, giant	Arundo spp.
Ribbon grass	Phalaris arundinacea
Tufted hair grass	Deschampsia caespitosa
Perennials	
Acacia	Acacia redolens
Asparagus	Asparagus spp.
Aster, New York	Aster novi-belgii
Aster, Stokes	Stokesia laevis
Astilibe (False spirea)	Astilibe spp.

Geum triflorum

Gypsophila elegans

(continued)

(continued)

Avens

Baby's breath

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Perennials (continued)	
Baby's breath	Gypsophila paniculata
Beard-tongue	Penstemon spp.
Bellflower	Campanula spp.
Bellflower, willow	Campanula persicifolia
Bird of paradise	Caesalpinia pulcherrima
Black-eyed Susan <sup>1</sup>	Rudbeckia hirta
Blanket flower <sup>1</sup>	Gaillardia aristata
Blanket flower <sup>1</sup>	Gaillardia x grandiflora
Bleeding heart	Dicentra spectabilis
Butterfly weed	Asclepias tuberosa
California poppy <sup>1</sup>	Eschscholzia california
Calla lily	Zantedeschia aethiopica
Canna, common garden	Canna generalis 'Lucifer'
Carex	Carex spp.
Chincherinchee	Ornithogalum thyrsoides
Clover, crimson <sup>1</sup>	Trifolium incarnatum
Columbine	Aquilegia 'McKana Giant'
Columbine	Aquilegia x hybrida
Coreopsis (Tickseed) <sup>1</sup>	Coreopsis lanceolata
Crinum lily	Crinum spp.
Crocus	Crocus spp.
Daffodil (Narcissus)	Narcissus spp.
Daylily	Hemerocallis spp.
Fairy duster	Calliandra eriophylla
Fern, asparagus	Asparagus officinalis
ern, Boston	Nephrolepis exaltata
ern, hay-scented	Dennstaedtia punctilobula
ern, leatherleaf <sup>2</sup>	Rumohra adiantiformis
ortnight lily	Moraea spp.
oxglove	Digitalis purpurea
reesia	Freesia x hybrida
Gaillardia	Gaillardia pulchella
Geum	Geum spp.
Gladiolus	Gladiolus spp.
Heather, dwarf	Calluna vulgaris
Hosta	Hosta spp.
ndian blanket¹	Gaillardia pulchella
	· · · · · · · · · · · · · · · · · · ·

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Perennials (continued)	
Lantana, weeping	Lantana montevidensis
Leopard's bane	Doronicum cordatum
Lily	Lillium spp.
Liriope, big blue	Liriope muscari
Liriope, creeping	Liriope spicata
Liriope, variegated	Liriope muscari
Montbretia	Crocosmia crocosmiiflora
Moonbeam	Coreopsis verticillata
Mugwort, Western	Artemesia ludoviciana
Nightshade	Solanum spp.
Orchid, peacock	Acidanthera bicolor
Oxeye daisy <sup>1</sup>	Chrysanthemum leucanthemum
Palm, areca	Chysalidocarpus lutescens
Palm, pygmy date	Phoenix roebelence
Palm, Washington	Washington robusta
Peony, Chinese	Paeonia lactiflora
Purple coneflower <sup>1</sup>	Echinacea purpurea
Purple gay-feather	Liatris pycnostachya
Purple loosestrife	Lythrum virgatum
Rodgersia	Rodgersia henricie
Rosemary	Rosmarinus officinalis
Sedge	Carex spp.
Shasta daisy <sup>1</sup>	Chrysanthemum x superbun
Statice	Limonium latifolia
Statice, German	Goniolimon tartaricum
Sweet flag	Acorus calamus
Tickseed <sup>1</sup>	Coreopsis lanceolata
Texas bluebonnet	Lupinus texenis
Tulip	Tulipa spp.
Wonder flower	Ornithogalum thyrsoides
Yarrow <sup>1</sup>	Achillea millefolium
Zephyr lily	Zephyranthes spp.

AquaCap herbicide applications of 4.2 pints/A (2.1 quarts/A) in wildflower plantings established from seed.

<sup>&</sup>lt;sup>2</sup> Applications of **Pendulum AquaCap** to immature ferns (during periods of new growth of fronds) may result in some injury.

**Table 4. Tolerant Ornamental Species** (continued)

Common Name	Scientific Name
Shrubs	
Abelia, glossy	Abelia grandiflora
Alder, witch	Fothergilla gardenii
Aucuba, gold	Aucuba japonica
Azalea	Rhododendron spp.
Bamboo, heavenly	Nandina domestica
Barberry	Berberis gladwynensis
Barberry, Japanese	Berberis thunbergii
Blue indigo bush	Dalea gregii
Bottlebrush, lemon	Callistemon citrinus
Boxwood, common	Buxus sempervirens
Boxwood, Japanese	Buxus microphylla
Brittlebush	Encelia farinosa
Buttonbush	Cephalanthus occidentalis
Camellia	Camellia japonica
Cape jasmine	Gardenia jasminoides
Cassia, feathery	Cassia artemisioides
Cordyline	Cordyline spp.
Correa	Correa spp.
Cotoneaster	Cotoneaster apiculatus
Cotoneaster, bearberry	Cotoneaster dammeri
Cotoneaster, rock	Cotoneaster horizontalis
Cypress, Italian	Cupressus sempervirens
Cypress, Leyland	Cupressocyparis leylandii
Deutzia, slender	Deutzia gracilis
Dogwood, red twig	Cornus sericea
Elaeagnus	Elaeagnus ebbingei
Escallonia	Escallonia fradesii
Euonymus	Euonymus fortunei
Euonymus, golden	Euonymus japonica
Euonymus, winged	Euonymus alata
Firethorn	Pyracantha coccinea
orsythia, border	Forsythia intermedia
ragrant olive	Osmanthus fragrans
Fuchsia, California	Zauschineria californica
Gardenia	Gardenia jasminoides
lawthorne, Indian	Raphiolepis indica
Hibiscus	Hibiscus syriacus
Holly, Chinese	llex cornuta

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Shrubs (continued)	
Holly, Japanese	llex crenata
Holly, Fosters	llex attenuata 'Fosteri'
Holly, Savannah	llex attenuata
Holly, Yaupon	llex vomitoria
Honeysuckle, bush	Diervilla lonicera
Hopseed bush	Dodonaea viscosa
Hopbush	Dodonaea viscosa
Hydrangea	Hydrangea macrophylla
Juniper	Juniperus spp.
Juniper, Chinese	Juniperus chinensis v. pfitze
Juniper, shore	Juniperus conferta
Juniper, trailing	Juniperus horizontalis
Laurel, cherry	Prunus laurocerasus
Laurel, mountain	Kalmia latifolia
Laurel, Otto Luyken	Prunus laurocerasus
Laurel, Schipka	Prunus schipkanensis
Laurustinus	Viburnum tinus
Lavender, English	Lavandula angustifolia
Leucothoe	Leucothoe fontanesiana
Leucothoe, coast	Leucothoe axillaris
Lilac, cut-leaf	Syringa laciniata
Lily-of-the-Nile	Agapanthus africanus
Mahonia	Mahonia aquifolium
Mock orange	Pittosporum tobira
Myrtle, compact	Myrtus communis
Myrtle, wax	Myrica cerifera
Nandina	Nandina domestica
Oleander	Nerium oleander
Oregon grape	Mahonia aquifolium
Osmanthus	Osmanthus fragrans
Palm, European fan	Chamaerops humilis
Palm, Mediterranean fan	Chamaerops spp.
Phlox, prickly	Leptodactylon californicum
Photinia, Fraser	Photinia x fraseri
Pieris, Japanese	Pieris japonica
Pine, Mugo	Pinus mugo
Plum, Natal	Carissa grandiflora
Privet, California	Ligustrum ovalifolium

(continued)

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Shrubs (continued)	
Privet, glossy	Ligustrum lucidum
Privet, variegated	Ligustrum sinensis
Privet, waxleaf	Ligustrum japonicum
Pyracantha	Pyracantha coccinea
Quince, flowering	Chaenomeles japonica
Ranger, Texas	Leucophyllum frutescens
Redroot	Ceanothus spp.
Rhododendron	Rhododendron spp.
Robira	Pittosporum tobira
Rose	Rosa spp.
Spice plant	Illicium parviflorum
Spiraea	Spiraea vanhouttei
Spiraea, Anthony Waterer	Spiraea x bumalda
Spiraea, Japanese	Spiraea japonica
Sweet bay	Laurus nobilis
Trumpet bush	Tecoma stans
Verbena, lemon	Aloysia triphylla
Viburnum	Viburnum suspensum
Vitex	Vitex spp.
Weigela	Weigela florida
Wild lilac	Ceanothus spp.
Wisteria	Wisteria spp.
Xylosma	Xylosma congestum
Yellowbells	Tecoma stans
Yew <sup>1</sup>	Taxus media
Yew, Japanese¹	Taxus cuspidata
Yew, Southern <sup>1</sup>	Podocarpus macrophyllus
Yucca, Adam's needle	Yucca filamentosa
Yucca, weeping	Yucca pendula
Applications of <b>Pendulur</b> should not be made during terminals may occur.	n® AquaCap herbicide g spring growth or injury to
Trace	

Trees	
Alder, European black	Alnus glutinosa
Apple	Malus spp.
Arborvitae, American	Thuja occidentalis
Arbutus	Arbutus spp.
Ash, red	Fraxinus pennsylvanica

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Trees (continued)	ELLY WALL BE A
Ash, white	Fraxinus americana
Aspen, bigtooth	Populus grandidentata
Aspen, quaking	Populus tremuloides
Basswood	Tilia spp.
Birch, European weeping	Betula pendula
Birch, river	Betula nigra
Buckeye, red	Aesculus pavia
Cedar, white	Thuja occidentalis
Chamaecyparis, Boulevard	Chamaecyparis pisifera
Cherry, black	Prunus serotina
Cherry, choke	Prunus virginiana
Cherry, Kwanzan	Prunus serrulata
Cherry, Nanking	Prunus tomentosa
Cottonwood	Populus deltoides
Crabapple	Malus spp.
Crape myrtle	Lagerstroemia indica
Cryptomeria, Japanese cedar	Cryptomeria japonica
Cypress, bald	Taxodium distichum
Cypress, Leyland	Cupressocyparis leylandii
Dogwood, flowering	Cornus florida
Dogwood, Korean	Cornus kousa
Dogwood, shrub	Cornus spp.
Dogwood, silky	Cornus amomum
Elm	Ulmus japonica
Elm, winged	Ulmus alata
Eucalyptus (Silver-dollar) tree	Eucalyptus cinerea
Fir, balsam	Abies balsamae
Fir, Douglas	Pseudotsuga menziesii
Fir, Fraser	Abies fraseri
Fir, white	Abies concolor
Franklinia	Franklinia spp.
Fringe tree	Chlonenthus retusus
Ginkgo	Ginkgo biloba
Gum, black	Nyssa sylvatica
Gum, sour	Nyssa sylvatica
Haw, black	Viburnum prunifolium

(continued)

**Table 4. Tolerant Ornamental Species** *(continued)* 

Common Name	Scientific Name
Trees (continued)	
Hawthorn	Crataegus spp.
Hemlock, Canada	Tsuga canadensis
Hemlock, Eastern	Tsuga canadensis
Holly, American	llex opaca
Honeylocust	Gleditsia triacanthos
Lilac, common	Syringa vulgaris
Lilac, Japanese tree	Syringa reticulata
Linden	Tilia spp.
Magnolia, saucer	Magnolia soulangiana
Magnolia, Southern	Magnolia grandiflora
Magnolia, star	Magnolia stellata
Maidenhair tree	Ginkgo biloba
Maple, Japanese	Acer palmatum
Maple, Norway	Acer platanoides
Maple, red	Acer rubrum
Maple, sugar	Acer saccharum
Nannyberry, rusty	Viburnum rufidulum
Oak, chinquapin	Quercus muehlenbergii
Oak, live	Quercus virginiana
Oak, pin	Quercus palustris
Oak, red	Quercus rubra
Oak, swamp chestnut	Quercus michauxii
Oak, water	Quercus nigra
Oak, white	Quercus alba
Oak, willow	Quercus phellos
Olive	Olea europaea
Palm, date	Phoenix spp.
Palm, fan	Washingtonia spp.
Palm, pindo	Butia spp.
Palm, Washington	Washingtonia spp.
Peach	Prunus persica
Pear, Bradford	Pyrus calleryana 'Bradford'
Pecan	Carya illinoensis
Pine, Austrian	Pinus nigra
Pine, Italian stone	Pinus pinea
Pine, loblolly	Pinus taeda
Pine, Monterey	Pinus radiata
Pine, red	Pinus resinosa

**Table 4. Tolerant Ornamental Species** *(continued)* 

<b>Common Name</b>	Scientific Name
Trees (continued)	
Pine, Scotch	Pinus sylvestris
Pine, Virginia	Pinus virginiana
Pine, white	Pinus strobus
Plum, purple leaf	Prunus cerasifera
Poplar, black	Populus nigra
Redcedar, Eastern	Juniperus virginiana
Redcedar, Western	Thuja plicata
Red ironbark	Eucalyptus sideroxylon 'Rosea'
Redwood, dawn	Metasequoia glyptostroboides
Sequoia, giant	Sequoiadendron giganteum
Serviceberry	Amelanchier laevis
Sourwood	Oxydendrum arboreum
Spruce, Colorado blue	Picea pungens
Spruce, dwarf Alberta	Picea glauca 'Albertiana'
Spruce, Norway	Picea abies
Spruce, white	Picea glauca
Sweetgum	Liquidambar styraciflua
Sycamore	Platanus occidentalis
Trachycarpus	Trachycarpus spp.
Tulip tree	Liriodendron tulipifera
Walnut, black	Juglans nigra
Willow, weeping	Salix babylonica
Yellowwood	Cladrastis lutea

# **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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TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

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 warted only by agreement in writing signed by a duly authorized representative of BASF.

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BASF Corporation 26 Davis Drive Research Triangle Park, NC 27709



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# 1. Product and Company Identification

Company
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

24 Hour Emergency Response Information CHEMTREC: 1-800-424-9300

BASF HOTLINE: 1-800-832-HELP (4357)

Substance number: Molecular formula: Chemical family:

C13 H19 N3 O4 aniline derivative pendimethalin

000000171005

Chemical family: Synonyms:

# 2. Hazards Identification

#### **Emergency overview**

CAUTION:

Causes eye irritation.
HARMFUL IF ABSORBED THROUGH SKIN.
HARMFUL IF SWALLOWED.
KEEP OUT OF REACH OF CHILDREN.
KEEP OUT OF REACH OF DOMESTIC ANIMALS.
Avoid contact with the skin, eyes and clothing.

See Product Label for additional precautionary statements.

State of matter: liquid Colour: yellow to brown Odour: faint odour, nutty

#### Potential health effects

Primary routes of exposure:

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

#### Acute toxicity:

Relatively nontoxic after single ingestion. Relatively nontoxic after short-term inhalation. Relatively nontoxic after short-term skin contact.

### Irritation / corrosion:

May cause slight but temporary irritation to the eyes. May cause slight irritation to the skin.

#### Sensitization:

Skin sensitizing effects were not observed in animal studies.

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#### Medical conditions aggravated by overexposure:

Individuals with pre-existing diseases of the respiratory system, skin or eyes may have increased susceptibility to excessive exposures.

#### Signs and symptoms of overexposure:

orange-red coloured urine caused by dye (not associated with methemoglobinemia)

#### Potential environmental effects

#### Aquatic toxicity:

Very toxic (acute effect) to aquatic organisms.

#### Terrestrial toxicity:

Acutely harmful to terrestrial organisms.

# 3. Composition / Information on Ingredients

CAS Number
40487-42-1
38.7 %
61.3 %
Chemical name pendimethalin
Proprietary ingredients

#### 4. First-Aid Measures

#### General advice:

First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

#### If inhaled:

Remove the affected individual into fresh air and keep the person calm.

#### If on skin:

Rinse skin immediately with plenty of water for 15 - 20 minutes.

#### If in eyes:

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.

#### If swallowed:

Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Do not induce vomiting. Have person sip a glass of water if able to swallow.

## Note to physician

Antidote: No known specific antidote.

Treatment: Treat symptomatically.

### 5. Fire-Fighting Measures

Flash point: > 230 °F

Autoignition: 354 °C (DIN EN 14522)
Lower explosion limit: not determined

Upper explosion limit: not determined

Flammability: not highly flammable

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#### Suitable extinguishing media:

foam, dry powder, carbon dioxide, water spray

#### Hazards during fire-fighting:

carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons,

If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released in case of fire.

#### Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

#### Further information:

Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

# 6. Accidental release measures

#### Personal precautions:

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

#### **Environmental precautions:**

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

#### Cleanup:

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

### 7. Handling and Storage

#### **Handling**

#### General advice:

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

#### Protection against fire and explosion:

The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

### **Storage**

#### General advice:

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Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

#### Storage incompatibility:

General advice: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

#### Temperature tolerance

Protect from temperatures below: 0 °C

Changes in the properties of the product may occur if substance/product is stored below indicated temperature for extended periods of time.

Protect from temperatures above: 40 °C

Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

### 8. Exposure Controls and Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

#### Advice on system design:

Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

#### Personal protective equipment

# RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

#### Respiratory protection:

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and vapours. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

#### Hand protection:

Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

#### Eye protection:

Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

#### **Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

#### General safety and hygiene measures:

Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

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## 9. Physical and Chemical Properties

Form:

microencapsulated, suspension

Odour:

faint odour, nutty

Colour:

yellow to brown

pH value:

approx. 8 - 10 approx. 0 °C

(1%(m), 21°C)

Melting point: Density:

Vapour density:

approx. 9.79

Information applies to the solvent. (68 °F)

lb/USg

not determined not applicable

Partitioning coefficient n-

octanol/water (log Pow): Viscosity, dynamic:

128 mPa.s

(20 °C) (OECD 114)

Solubility in water:

dispersible

Molar mass:

281.31 g/mol

# 10. Stability and Reactivity

#### Conditions to avoid:

Avoid all sources of ignition: heat, sparks, open flame. Avoid prolonged storage. Avoid electro-static discharge. Avoid contamination. Avoid prolonged exposure to extreme heat. Avoid extreme temperatures,

#### Substances to avoid:

strong acids, strong bases, strong oxidizing agents

#### Hazardous reactions:

The product is chemically stable.

Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

#### **Decomposition products:**

No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

#### Thermal decomposition:

Possible thermal decomposition products:

carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons

Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released.

## Oxidizing properties:

not fire-propagating

### 11. Toxicological information

## **Acute toxicity**

#### Oral:

Type of value: LD50 Species: rat (male/female)

Value: > 5,000 mg/kg (OECD Guideline 401)

#### Inhalation:

Type of value: LC50 Species: rat (male/female)

Value: > 5.23 mg/l (OECD Guideline 403)

Exposure time: 4 h An aerosol was tested. No mortality was observed.

#### Dermal:

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Type of value: LD50 Species: rat (male/female)

Value: > 5,000 mg/kg (OECD Guideline 402)

#### Irritation / corrosion

Skin:

Species: rabbit Result: mildly irritating

Eye:

Species: rabbit Result: mildly irritating

#### Sensitization:

modified Buehler test Species: guinea pig Result: Non-sensitizing. Method: OECD Guideline 406

#### Repeated dose toxicity

Information on: pendimethalin

Assessment of repeated dose toxicity:

No substance-specific organtoxicity was observed after repeated administration to animals. Adaptive effects were observed after repeated exposure in animal studies.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

Assessment of repeated dose toxicity:

The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Information on: Methylenediphenyl diisocyanate

Assessment of repeated dose toxicity:

The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

### Carcinogenicity

Information on: pendimethalin

In long-term studies in rats the substance induced thyroid tumors. The effect is caused by an animal specific mechanism that has no human counter part. In long-term studies in mice in which the substance was given by feed, a carcinogenic effect was not observed.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations.

These effects are not relevant to humans at occupational levels of exposure.

Information on: Methylenediphenyl diisocyanate

A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure.

## Development:

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Information on: Methylenediphenyl diisocyanate

The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

#### Experiences in humans:

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Pendimethalin is a strongly orange-red compound - virtually an aniline dye. Cases have been described of of orange-yellow colouration of urine following heavy exposure of workers to the dust of pendimethalin. Despite its structure as both a nitro-compound and aromatic amine, exposure to pendimethalin is NOT associated with methemoglobinemia.

#### Other Information:

Misuse can be harmful to health.

# 12. Ecological Information

#### Fish

Acute:

OECD Guideline 203 static

Oncorhynchus mykiss/LC50 (96 h): 20.36 mg/l

#### **Aquatic invertebrates**

Acute:

OECD Guideline 202, part 1 static Daphnia magna/EC50 (48 h): > 100 mg/l

### **Aquatic plants**

Toxicity to aquatic plants:

OECD Guideline 201 green algae/EC50 (72 h): 1.49 mg/l

#### Non-Mammals

Information on: pendimethalin
Other terrestrial non-mammals:
mallard duck/LD50: 1,421 mg/kg
Acutely harmful to terrestrial organisms.
Honey bee/LD50: 49.8 ug/bee
Acutely harmful to terrestrial organisms.

#### **Environmental mobility:**

Information on: pendimethalin

Assessment transport between environmental compartments:

Following exposure to soil, adsorption to solid soil particles is probable, therefore contamination of groundwater is not expected.

#### Other adverse effects:

The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

# 13. Disposal considerations

#### Waste disposal of substance:

Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

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#### Container disposal:

Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: D028

The waste codes are manufacturer's recommendations based on the designated use of the product. Other use and special waste disposal treatment on customer's location may require different waste-code assignments.

### 14. Transport Information

**Land transport** 

USDOT

Not classified as a dangerous good under transport regulations

Sea transport

**IMDG** 

Hazard class: Packing group:

Packing group: III
ID number: UN 3082
Hazard label: 9, EHSM
Marine pollutant: YES

Proper shipping name:

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

(contains PENDIMETHALIN)

Air transport

IATA/ICAO

Hazard class:
Packing group:

ID number: UN 3082 Hazard label: 9, EHSM

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

(contains PENDIMETHALIN)

Further information

DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this MSDS for the RQ for this product.

# 15. Regulatory Information

#### Federal Regulations

Registration status:

Crop Protection TSCA, US released / listed

Chemical TSCA, US blocked / not listed

OSHA hazard category: Skin and/or eye irritant; Chronic target organ effects reported

EPCRA 311/312 (Hazard categories): Acute; Chronic

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**EPCRA 313:** 

Revision date: 2012/11/29

Page: 9/9

Version: 4.0

(30255964/SDS CPA US/EN)

CAS Number 40487-42-1

**Chemical name** pendimethalin

#### 16. Other Information

# Refer to product label for EPA registration number.

Recommended use: herbicide

NFPA Hazard codes:

Health: 1

Fire: 1

Reactivity: 1

Special:

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

#### MSDS Prepared by:

**BASF NA Product Regulations** msds@basf.com

MSDS Prepared on: 2012/11/29

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