

[Container Label]

GROUP

14

HERBICIDE

Valor Herbicide

Emulsifiable Concentrate

COMMERCIAL

This product contains petroleum distillates.

For control of silvery-thread moss occurring on golf course greens and tees.

ACTIVE INGREDIENT: Carfentrazone-ethyl 224 g/L

Contains 1,2-benzisothiazolin-3-one at 0.010%, 5-chloro-2-methyl-4-isothiazolin-3-one at 0.00049%,
2-methyl-4-isothiazolin-3-one at 0.00017% as preservatives

REGISTRATION NUMBER 36061 PEST CONTROL PRODUCTS ACT

READ THE LABEL BEFORE USING

KEEP OUT OF THE REACH OF CHILDREN

CAUTION
EYE AND SKIN IRRITANT

NET CONTENTS: 0.5-945 mL

Belchim Crop Protection Canada Inc.
104 Cooper Drive, Unit 3
Guelph ON N1C 0A4
1-866-613-3336

GENERAL INFORMATION

Valor Herbicide is a contact herbicide with little or no residual activity that provides selective postemergence control of silvery thread moss (*Bryum argenteum*) in turfgrass. The active ingredient of Valor Herbicide is carfentrazone-ethyl. It is an aryl triazolinone herbicide, which interrupts chlorophyll synthesis and produces metabolic byproducts that disrupt plant cell membranes. This process only occurs in susceptible green plants in the presence of light.

Valor Herbicide rapidly penetrates into the plant cells and symptoms may be apparent on foliage of susceptible weeds in 24 hours or less. Complete desiccation and death occurs within 7 to 14 days of application.

Extremes in environmental conditions e.g. excessively high or low moisture or temperature may affect the activity of this product. Under warm, moist conditions appearance of herbicide symptoms may be accelerated while under very dry or cool conditions the expression of herbicidal symptoms is delayed. However, this product remains highly effective under both cool and warm environmental conditions. Moss hardened by stress (e.g., drought or cold) is less susceptible to this product. Applications should be made when the moss is actively growing.

PRECAUTIONS

KEEP OUT OF THE REACH OF CHILDREN.

Hazards to Humans and Domestic Animals

Causes eye and skin irritation. DO NOT get in eyes or on skin.

Personal Protective Equipment (PPE)

Mixers and loaders must wear long-sleeved shirt, long pants, chemical resistant gloves, and shoes plus socks. Applicators must wear long-sleeved shirt, long pants and shoes plus socks. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Re-Entry Statement

Do not allow people (other than applicator) or pets on treatment area during application. Do not enter treatment area until spray has dried.

ENVIRONMENTAL PRECAUTIONS

This product contains an active ingredient and aromatic petroleum distillates, which are toxic to aquatic organisms. Toxic to non-target terrestrial plants. Observe spray buffer zones specified under DIRECTIONS FOR USE. This product contains aromatic petroleum distillates that are toxic to aquatic organisms.

To reduce runoff from treated areas into aquatic habitats, avoid application to areas with a

moderate to steep slope, compacted soil, or clay. Avoid application when heavy rain is forecast. Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative filter strip between the treated area and the edge of the water body. Additional guidance can be found on the Runoff Mitigation portion of the Canada.ca website.

FIRST AID

If Inhaled: 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 centre or doctor for further treatment advice.

If on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control centre or doctor for treatment advice.

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

If Swallowed: Call a poison control centre or doctor IMMEDIATELY for treatment advice. Do not induce vomiting unless told to do so by the poison control centre or doctor. Do not give **any** liquid to the person. Do not give anything by mouth to an unconscious person.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION

Note to Physician: This product is expected to have low oral and dermal toxicity, and moderate inhalation toxicity. It is expected to be slightly irritating to the skin and minimally irritating to the eyes. Treatment is otherwise controlled by removal of exposure followed by symptomatic and supportive care. This product contains petroleum distillates. Vomiting may cause aspiration pneumonia.

STORAGE

Store this product away from food or feed. Not for use or storage in or around the home. Store in original containers only. Store in a cool, dry place and avoid excess heat. Carefully open containers. After partial use, replace lids and close tightly. Isolate Valor Herbicide in storage to prevent contamination of other pesticides, fertilizers, and water. In case of spill, avoid contact, isolate area and keep out unprotected persons and animals. Confine spills. Call 1-866-336-2983.

DISPOSAL

DO NOT reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.

2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial or territorial requirements.

For information on disposal of unused, unwanted product, contact the registrant or the provincial or territorial regulatory agency. Contact the registrant and the provincial or territorial regulatory agency in case of a spill, and for cleanup of spills.

NOTICE TO USER

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RESISTANCE MANAGEMENT RECOMMENDATIONS

For resistance management, Valor Herbicide is a Group 14 herbicide. Any weed population may contain or develop plants naturally resistant to Valor Herbicide and other Group 14 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay herbicide resistance:

- Where possible, rotate the use of Valor Herbicide or other Group 14 herbicides with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group when such use is permitted.
- Herbicide use should be based on an IPM program that includes scouting, historical information related to herbicide use and crop rotation, and considers tillage (or other mechanical, cultural, biological and other chemical control practices).
- Monitor treated weed populations for resistance development.
- Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment and planting clean seed.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact Belchim Crop Protection Canada Inc. at 1-866-613-3336.

DIRECTIONS FOR USE:

GENERAL USE PRECAUTIONS

As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

Avoid spray drift onto non-target susceptible plants such as vegetables, flowers, ornamentals, trees, shrubs and other desirable plants.

Do not apply when conditions are conducive to spray drift or poor spray coverage.

Do not apply more than 490 mL of product (110 grams a.i. of carfentrazone-ethyl) per hectare per application or more than 440 grams a.i. of carfentrazone-ethyl per hectare per year. The minimum retreatment interval for sequential broadcast applications of this product is two (2) weeks.

Do not apply this product through any type of irrigation system.

TURFGRASS TOLERANCE

Turfgrasses tolerant to Valor Herbicide are listed below. Belchim Crop Protection Canada Inc. does not recommend application to turfgrass not listed.

Creeping bentgrass, colonial bentgrass, annual bluegrass

These established grasses are generally tolerant to applications of Valor Herbicide at labeled rates.

Newly Seeded, Sodded or Sprigged Turfgrass

Valor Herbicide can be applied to creeping bentgrass at 7 days or more after emergence when established by both seeding and sprigging. Areas treated with Valor Herbicide may be seeded or over-seeded one day following application.

SPRAY TANK PREPARATION

It is important that spray equipment is clean and free of existing pesticide deposits before using this product. Follow the spray tank clean-out procedures specified on the label of the product previously applied before adding Valor Herbicide to the spray tank. If sprayer has been stored or idle, purge the spray boom and nozzles with clean water before charging sprayer with products to be applied.

MIXING INSTRUCTIONS

- Valor Herbicide is an aqueous base emulsion containing 224 grams active ingredient per litre and is intended for dilution with water.
- Fill the spray tank 3/4 full with clean water. Make sure the agitation system is operating. Add the recommended amount of Valor Herbicide and complete filling the spray tank to the desired level. The mechanical or bypass agitation must be sufficient to ensure uniform spray mixture during application.
- Avoid the overnight storage of Valor Herbicide spray mixtures.
- Premixing Valor Herbicide spray solutions in nurse tanks is not recommended.

APPLICATION DIRECTIONS

Spray coverage

Valor Herbicide is a contact herbicide with little or no residual activity. It produces herbicidal symptoms only in the portions of the silvery thread moss with which it comes into direct contact. Therefore, to achieve maximum effectiveness of this product, select a spray volume and nozzle system that ensures thorough and uniform coverage and at the same time minimizes the spray fines. Spray droplets larger than 400 microns may reduce coverage and result in loss of moss control. Applications should be made using spray volumes of 748-935 L/ha. Use higher spray volumes when there is a dense moss population or turfgrass canopy or where uniform coverage is difficult to obtain.

Spot Treatments (Applications with hand-operated sprayers such as backpack sprayers, compression sprayers, knapsack sprayers)

To avoid overdosing when using a hand-held wand, use a flat fan nozzle and maintain the nozzle at a uniform recommended height over the turfgrass. Avoid back-and-forth and side-to-side motion with the wand. Hold the wand stationary and move forward at a uniform pace over the area to be treated.

SPRAYER CLEAN-OUT

Residues left in mixing equipment, spray tanks, hoses, spray booms and nozzles can cause non-target plant effects if they are not properly cleaned. Because Valor Herbicide can be highly phytotoxic to sensitive ornamental plants it is strongly recommended that only equipment that is dedicated exclusively to turf herbicides be used in the application of Valor Herbicide.

If not using a dedicated sprayer, observe the following cleanout procedures:

1. Drain spray tank, hoses, and boom and thoroughly wash the inside of the sprayer tank free of visible sediment and residues. Thoroughly flush tank, sprayer hoses, boom, and nozzles.
2. Fill the tank with clean water, and add 1 L of ammonia (containing at least 3% active) for every 100 L of water. Fill the tank to capacity and operate the sprayer for 15 minutes to flush hoses, boom and nozzles. Let the solution stand in the hoses, tank, boom and nozzles for several hours or overnight.
3. Drain the sprayer system. Rinse the tank with clean water and flush through the hoses and boom. Repeat the clean water rinse and flush. Remove and clean nozzles and screens in an ammonia solution separately.
 - Do not apply sprayer cleaning solutions or rinsate to any lawns, ornamentals, gardens or crops.
 - For more specific information on clean-out procedures contact Belchim Crop Protection Canada Inc. at 1-866-613-3336.
 - Should small quantities of Valor Herbicide remain in mixing, loading and/or spray equipment that has been cleaned as described above, they may be released during subsequent applications potentially causing effects to non-target vegetation. Belchim Crop Protection Canada Inc. accepts no liability for adverse responses to non-target plants or crops.

APPLICATION INFORMATION

Use ground sprayers designed, calibrated and operated to deliver uniform spray droplets to the

moss. Adjust sprayer nozzles to achieve uniform plant coverage. Overlaps and slower ground speeds (caused by continuing to spray while starting, stopping or turning) may result in higher application rates and possible turfgrass response.

Valor Herbicide as a stand-alone product for silvery thread moss control:

Valor Herbicide may be used for burndown and control of silvery thread moss (*Bryum argenteum*) occurring on golf course greens and tees consisting of bentgrass and annual bluegrass (*Poa annua*). To control silvery thread moss, apply Valor Herbicide at a rate 490 mL of product per hectare. Start applications when turfgrass is actively growing and first sign of silvery thread moss is present. Repeat at a 2-week-interval. Do not exceed 440 grams a.i./ha per year.

Control over longer periods:

If necessary, applications may be repeated every two weeks at a rate that is no less than 146 mL per hectare and no more than 490 mL of product per hectare to control moss that has re-established, as long as the annual maximum rate of 440 grams a.i./ha per year is not exceeded.

- Use a non-ionic surfactant, such as Agral 90 or Ag-Surf in the spray mix at a rate of 0.25% volume/volume (25 mL of surfactant per 100 Litres of water). Follow all adjuvant manufacturers use guidelines.
- Do not tank mix with other herbicides for silvery thread moss control. Application to bentgrass turf that is under stress due to extreme high (>32°C) or low temperatures, disease infection, insect infestation or extreme high or low moisture conditions may cause transitory yellowing. *Poa annua* may be damaged at rates greater than 146 mL per hectare.
- Most creeping bentgrass varieties are tolerant to Valor Herbicide applications; however, not all varieties of creeping bentgrass have been fully evaluated. First confirm tolerance by making an application to a small test area when applying Valor Herbicide to creeping bentgrass varieties other than Penncross or Crenshaw.
- Cultural practices that favour the establishment of healthy bentgrass will also help to displace moss that is suppressed by the Valor Herbicide treatment.

SPRAY DRIFT MANAGEMENT AND SPRAY BUFFER ZONES

Field sprayer application: DO NOT apply when wind speed is less than 1 km/h. Avoid application of this product when winds are gusty. DO NOT apply with sprays finer than the American Society of Agricultural and Biological Engineers (ASABE) S572 (572.1 to 572.3) Medium classification. Boom height must be 60 cm or less above the crop or ground.

DO NOT apply by air.

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR AND THE GOLF COURSE OWNER.

The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making

decisions.

The following drift management requirements must be followed to avoid off-target movement from applications to turfgrass.

Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The optimum drift management strategy is to apply the largest droplets that provide sufficient coverage and performance. Applying larger droplets reduces drift potential, but will not prevent drift when applications are made improperly, or under unfavourable environmental conditions. (See Wind, Temperature and Humidity, and Temperature Inversions.)

Controlling Spray Droplet Size

VMD – VMD is the expression of the droplet size of the spray cloud. The VMD value means that 50% of the droplets are larger than the expressed value and 50% of the droplets are smaller than the expressed value. Optimum Valor Herbicide spray clouds should be 450 microns with fewer than 10% of the droplets being 200 microns or smaller.

Volume – Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows usually produce larger droplets.

Pressure – Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

Number of Nozzles – Use the minimum number of nozzles that provide uniform coverage.

Nozzle Type – Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low drift nozzles.

Application Height – Making applications at the lowest height that is safe reduces exposure of spray droplets to evaporation and wind movement.

Wind – Drift potential is lowest between winds speeds of 5 to 16 km/h. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. Applications shall be avoided below 5 km/h due to variable wind direction and high inversion potential.

Do not apply Valor Herbicide when wind speed exceeds 16 km/h. NOTE: Local terrain can influence wind patterns. Every applicator shall 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 – Do not apply Valor Herbicide during a temperature inversion because the drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud 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 following morning. Their presence can be indicated by ground fog. However, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Spray buffer zones:

A spray buffer zone is NOT required for uses with hand-held application equipment permitted on this label,

The spray buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of Application	Crop/Site	Spray Buffer Zones (metres) Required for the Protection of:				
		Freshwater Habitat of Depths:		Estuarine/Marine Habitat of Depths:		Terrestrial Habitat:
		Less than 1 m	Greater than 1 m	Less than 1 m	Greater than 1 m	
Field sprayer	Turf	1	1	1	1	10

When tank mixes are permitted, consult the labels of the tank mix partners and observe the largest (most restrictive) spray buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASABE) category indicated on the labels for those tank mix partners.

The spray buffer zones for this product for conventional application equipment can be modified based on weather conditions and spray equipment configuration by accessing the Spray Buffer Zone Calculator on the Drift Mitigation portion of the Canada.ca website.

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