

SPECIMEN



Group 7 Fungicide

# Emerald<sup>®</sup>

F U N G I C I D E

For disease control on golf course turfgrass

**Active Ingredient:**

Boscalid: 3-pyridinecarboxamide, 2-chloro-N-(4'-chloro(1,1'-biphenyl)-2-yl)- ..... 70.0%

**Other Ingredients:** ..... 30.0%

**Total:** ..... 100.0%

EPA Reg. No. 7969-196

EPA Est. No.

**KEEP OUT OF REACH OF CHILDREN  
WARNING/AVISO**

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 booklet 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:**

<b>FIRST AID</b>	
<b>If in eyes</b>	<ul style="list-style-type: none"> <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>
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• <b>DO NOT</b> induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• <b>DO NOT</b> give anything by mouth to an unconscious person.</li> </ul>
<b>If inhaled</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth to mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).</p>	

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**Warning.** Causes substantial but temporary eye injury. Harmful if absorbed through skin. Harmful if swallowed.

**DO NOT** get in eyes or on clothing. Avoid contact with skin, eyes or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

### Personal Protective Equipment (PPE)

**Applicators and other handlers must wear:**

- Protective eyewear (goggles, face shield, or safety glasses)
- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks

Follow the 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.

### User Safety Recommendations

#### Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then 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

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

### Surface Water Advisory

This product may contaminate water through drift of spray in wind. This product has a potential for runoff according to the pesticide's "mean" soil partition coefficient (15 mL/g<sup>2</sup>) for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecast to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

## Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling. **DO NOT** apply this product in a way that will contact workers or other persons, either directly or through drift. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

**This product is for golf course use only. Not for use on residential turfgrass, turfgrass being grown for sale, or other commercial use such as sod production, seed production, or for research purposes.**

**FAILURE TO FOLLOW THE USE DIRECTIONS AND PRECAUTIONS ON THIS LABEL MAY RESULT IN PLANT INJURY OR POOR DISEASE CONTROL.**

**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, nurseries, or greenhouses.

**DO NOT enter or allow others to enter treated areas until sprays have dried.**

**Storage and Disposal**

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

**Pesticide Storage. DO NOT** store at extreme temperatures. Store in a dry place away from heat or open flame.

**Pesticide Disposal.** Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility. If these wastes cannot be disposed of 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 Disposal**

**(for paper or plastic bags)**

**Nonrefillable Container. DO NOT reuse or refill this container.** After completely emptying container into application equipment, dispose of empty bag in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

**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 ≤ 50 pounds) as follows:** Empty the remaining contents into application equipment or a mix tank. 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.

(continued)

**Storage and Disposal** (continued)

**Pressure rinse as follows:** Empty the remaining contents into application equipment or mix tank. 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.

**In Case of Spill**

In case of large-scale spillage regarding this product, call:  
CHEMTREC 1-800-424-9300  
BASF Corporation 1-800-832-HELP (4357)

**Steps to be taken in case material is released or spilled:**

Wear the personal protective equipment specified on the label. Recover the material for reuse according to the label whenever possible. Sweep and/or shovel up the spilled material into an appropriate closed container. Avoid the creation of dusty conditions. Remove and wash clothing and personal protective equipment prior to reuse. Keep the spill out of all sewers and open bodies of water.

**Product Information**

**Emerald® fungicide** is a systemic anilide fungicide for the control of dollar spot (*Sclerotinia homoeocarpa*) and bentgrass dead spot (*Ophiosphaerella agrostis*) in turfgrass grown on golf courses. Optimum disease control is achieved when **Emerald** is applied in a regularly scheduled preventive spray program and is used in a rotation program with other effective fungicides. Because of its high specific activity, **Emerald** has good residual activity against target fungi.

For the control of turfgrass diseases not listed on this label, **Emerald** may be tank mixed with labeled rates of other fungicides. Follow label directions of any tank mix product and apply at the specified rate based on target disease. All applications should be made according to the use directions that follow. Failure to follow directions and precautions on this label may result in turfgrass injury and/or inferior disease control.

**Application Information**

**Emerald** is a systemic fungicide for the control of dollar spot and bentgrass dead spot on golf course turfgrass. **Emerald** may be applied as a solo foliar spray or in tank mixes with other registered turfgrass fungicides. **DO NOT** exceed the specified application rate or fail to comply with use restrictions listed in the **Resistance Management and Restrictions and Limitations**. All applications should be made according to the use directions that follow.

**Uses and Tolerances**

**Emerald can be used only on turf grown on golf courses.** Due to variability within turfgrass species, application techniques and possible tank mixes, neither the

manufacturer nor the seller has determined if **Emerald® fungicide** has adequate tolerance on all turfgrasses under all conditions. Therefore, apply the specified rate of **Emerald** on a small test area under conditions expected to be encountered and monitor for any adverse effects before applying **Emerald** to the targeted area.

### Spray Instructions

For maximum efficacy, **Emerald** should be applied prior to or in the early stages of disease development. For maximum efficacy, apply **Emerald** at the rates indicated in **Table 1. Application Rates and Intervals for Emerald® fungicide on Golf Course Turfgrass** in 2 to 4 gallons of water per 1000 square feet (87 to 174 gallons per acre). Use the shorter specified application interval and/or the higher specified rate when prolonged favorable disease conditions exist. Applications should be repeated at the specified interval as necessary.

- **Emerald** is most effective when applied preventively.
- Actual length of disease control will vary depending on environmental conditions, disease pressure, and turfgrass management practices.
- Calibrate sprayer prior to use.
- After application, allow foliage to dry prior to mowing or irrigation.
- Apply **Emerald** using sufficient water volume and pressure for adequate coverage of the foliage.
- Apply **Emerald** as instructed in **Specific Use Directions** with ground spray equipment.

### Resistance Management

The active ingredient in **Emerald** is boscalid, an anilide **Group 7** (carboxamide) fungicide. Boscalid is effective against strains of pathogens, such as dollar spot, that are resistant to other fungicides, such as the dicarboximides, sterol inhibitors, or benzimidazoles. Fungal isolates resistant to anilide fungicides, such as boscalid, may eventually dominate the fungal population if boscalid is used predominantly and repeatedly in the same area in successive years as the primary method of control for the targeted pathogen species. This may result in reduction of disease control by **Emerald** or other **Group 7** fungicides.

To maintain the performance of **Emerald** in turfgrass, **DO NOT** exceed the total number of sequential applications of **Emerald**. Adhere to the label instructions regarding the consecutive use of **Emerald**.

To delay the development of fungicide resistance:

#### • Tank mixtures

Use tank mixtures with fungicides from different target site of action groups that are registered/permitted for the same use and that are effective against the pathogens of concern. Use at least the minimum labeled rates of each fungicide in the tank mix.

#### • Integrated Pest Management (IPM)

Integrate **Emerald** into an overall disease and pest management program. Follow cultural practices known to reduce disease development. Use **Emerald** in advisory (disease forecasting) programs that recommend application timing based on environmental factors favorable for disease development.

#### • Monitoring

Monitor efficacy of all fungicides used in the disease management program against the targeted pathogen and record other factors that may influence fungicide performance and/or disease development. If **Emerald** appears to be less effective against a pathogen that it previously controlled or suppressed, contact a BASF representative or local turfgrass expert for further investigation.

**DO NOT make more than two (2) sequential applications of Emerald for disease control for dollar spot or bentgrass dead spot in golf course turfgrass. Then alternate to another effective fungicide before reapplying Emerald.**

---

### Addition of Additives

---

Due to the large number of additives or adjuvants that may be used, neither the manufacturer nor the seller has determined whether **Emerald** can be used safely with all additives on golf course turfgrass.

---

### Tank Mixing Information

---

#### Tank Mix Partners/Components

**Emerald** is compatible with most fungicide, insecticide and fertilizer products. If tank mixtures are used, adhere to restrictions due to rates, label directions and precautions on all labels. Physical incompatibility, reduced disease control, or turfgrass injury may result from mixing **Emerald** with fungicides, herbicides, insecticides, additives, or fertilizers. To improve control of certain diseases, **Emerald** may be tank mixed with other effective fungicides such as **Curalan® EG fungicide**, **Iprodione Pro fungicide** or **Propiconazole Pro fungicide**.

#### Compatibility Test for Tank Mix Components

Add components in the following sequence using 2 teaspoons for each pound or 1 teaspoon for each pint of label rate per acre.

1. **Water.** For 87 gallons per acre (2 gallons per 1000 square feet) spray volume, use 14.4 cups (3.5 liters) of water. For other spray volumes, adjust rates accordingly. Use only water from the intended source at the source temperature.
2. **Water-dispersible products** (dry flowables, wettable powders, suspension concentrates, or suspo-emulsions). Cap the jar and invert 10 cycles.
3. **Water-soluble products.** Cap the jar and invert 10 cycles.
4. **Emulsifiable concentrates** (oil concentrate or methylated seed oil when applicable). Cap the jar and invert 10 cycles.
5. **Water-soluble additives.** Cap the jar and invert 10 cycles.
6. Let the solution stand for 15 minutes.
7. **Evaluate** the solution for uniformity and stability. The spray solution should not have free oil on the surface, nor fine particles that precipitate to the bottom, nor thick (clabbered) texture. **DO NOT** use any spray solution that could clog spray nozzles.

## Mixing Order

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

1. **Water.** Begin by agitating a thoroughly clean sprayer tank 1/2 full of clean water.
2. **Products in PVA bags.** Place the water-soluble PVA bag into the mixing tank. The water-soluble PVA bag will dissolve in water to allow the contents to disperse. Wait until all water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
3. **Water-dispersible products** (dry flowables such as **Emerald® fungicide**, wettable powders, suspension concentrates, or suspo-emulsions).
4. **Water-soluble products.**
5. **Emulsifiable concentrates** (oil concentrate or methylated seed oil when applicable).
6. **Water-soluble additives** (AMS or UAN when applicable).
7. Remaining quantity of water.

Maintain maximum constant agitation during application.

**DO NOT allow mixture to stand for extended periods prior to application.**

## Cleaning Spray Equipment

Spraying equipment must be cleaned thoroughly before and after applying this product, particularly if a product with the potential to injure turfgrass was used prior to **Emerald**.

---

## Restrictions and Limitations

---

- Maximum seasonal use rate: **DO NOT** apply more than a total of 1.1 ounces of **Emerald** per 1000 sq ft per year (48 ounces **Emerald** per acre per year).
- Refer to **Specific Use Directions** for sequential application intervals for **Emerald**.
- **DO NOT** apply this product to turfgrass except for golf course turfgrass.
- **DO NOT** apply through any type of irrigation equipment.
- This product cannot be used to formulate or reformulate any other pesticide product.

---

## Specific Use Directions

---

Use **Emerald** for the control of dollar spot and bentgrass dead spot on golf course turfgrass. For maximum efficacy, **Emerald** should be applied prior to or in the early stages of disease development. Apply **Emerald** at the rates indicated in **Table 1. Application Rates and Intervals for Emerald® fungicide on Golf Course Turfgrass** in 2 to 4 gallons of water per 1000 square feet (87 to 174 gallons per acre). Use the shorter specified application interval and/or the higher specified rate when prolonged favorable disease conditions exist. Applications should be repeated at the specified interval as necessary.

**Table 1. Application Rates and Intervals for Emerald® fungicide on Golf Course Turfgrass**

Disease (Pathogen)	Rate (oz Emerald per 1000 square feet)	Rate (ozs Emerald per acre)	Application Intervals (days)	Comments
Dollar spot ( <i>Sclerotinia homoeocarpa</i> )	0.13 to 0.18	5.7 to 8.0	14 to 28	Begin applications prior to or in the early stages of disease development. Use the shorter specified application interval and/or the higher specified rate when prolonged favorable disease conditions exist.
Bentgrass dead spot ( <i>Ophiosphaerella agrostis</i> )	0.18	8.0	14	

**DO NOT** apply more than two (2) sequential applications of **Emerald**. Then alternate to another effective fungicide before reapplying **Emerald**.

**Table 2. Dilution Table for Spray Solutions of Emerald**

Emerald Use Rate (oz per 1000 sq ft)	ozs <b>Emerald</b> per 100 gallons spray solution		
	Spray Volume 2 gallons per 1000 sq ft	Spray Volume 3 gallons per 1000 sq ft	Spray Volume 4 gallons per 1000 sq ft
0.13	6.5	4.3	3.3
0.18	9.0	6.0	4.5

## 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.

To the extent consistent with applicable law, BASF makes no other express or implied warranty of fitness or merchantability or any other express or implied warranty.

To the extent consistent with applicable law, Buyer's exclusive remedy and BASF's exclusive liability, whether in contract, tort, negligence, strict liability, or otherwise, shall be limited to repayment of the purchase price of the product.

To the extent consistent with applicable law, BASF and the Seller disclaim any liability for consequential, 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 varied only by agreement in writing signed by a duly authorized representative of BASF.

0408

***Emerald and Curalan** are registered trademarks of BASF.*

© 2010 BASF Corporation  
All rights reserved.

007969-00196.20100809.**NVA 2010-04-181-0113**  
Based on: NVA 2008-04-181-0167  
Supersedes: 2010-04-181-0011

BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709

  
The Chemical Company