



**ACTIVE INGREDIENT:**

*Pseudomonas chlororaphis* strain AFS009†..... 50.0%

**OTHER INGREDIENTS:**..... 50.0%

**TOTAL:**..... 100.0%

† Contains not less than 1 X 10<sup>6</sup> cfu/g of product.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

**SEE INSIDE FOR ADDITIONAL PRECAUTIONARY STATEMENTS.**

**FIRST AID**

<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>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 – 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</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 – 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>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>

**HOT LINE NUMBER**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.

**EPA REG. NO.:** 91197-3-92488

**EPA EST. NO.:** 70815-GA-001

**Manufactured for:**  
AgBiome Innovations® Inc.  
PO Box 14069  
Research Triangle Park, NC 27709

## **PRECAUTIONARY STATEMENTS**

### **HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION:** Harmful if inhaled, absorbed through the skin, or swallowed. Causes moderate eye irritation. Avoid breathing dust or spray mist. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**Applicators and other handlers must wear:**

- long-sleeved shirt and long pants
- protective eyewear
- waterproof gloves
- shoes plus socks

Mixer/loaders and applicators must wear a NIOSH-approved particulate respirator with any N, R, or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables are available, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENGINEERING CONTROLS:** When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.607(d) and (e)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**IMPORTANT:** When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

### **USER SAFETY RECOMMENDATIONS**

**Users should:**

- Remove clothing/PPE 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

This product may be toxic to bees and other pollinating insects exposed to direct treatment. Do not apply this product while bees or other pollinating insects are actively visiting the treatment area. This product may be toxic to certain nontarget terrestrial arthropods. Minimize spray drift away from target area to reduce effects to nontarget insects.

For terrestrial uses - Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

## AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on the 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 4 hours.

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

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water) is:

- Coveralls
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

## NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are not within the scope of the Worker Protection Standard 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. Keep unprotected persons out of treated areas until sprays have dried.

## PRODUCT INFORMATION

Howler® is a biological fungicide containing the active ingredient *Pseudomonas chlororaphis* strain AFS009 for use on growing plants and crops to control plant diseases including *Rhizoctonia*, *Pythium*, *Fusarium*\*, *Phytophthora*, *Sclerotinia*, *Colletotrichum* and *Botrytis*. Howler® may be mixed with water and applied as a foliar spray, soil drench, in furrow spray, transplant spray or dip, cuttings or bare root dip, hydroponic or chemigation application in field or greenhouse use sites. It may also be mixed with potting mix or applied dry in furrow.

\*Not for use in California

## USE INSTRUCTIONS

Do not apply by aerial application.

Howler® has been evaluated for phytotoxicity on a variety of crops under various normal growing conditions. However, testing all crop varieties, in all mixtures and combinations, is not feasible. Prior to treating entire crop, test a small portion of the crop for sensitivity.

### Mixing directions

**Important:** Do not add Howler® to the mix tank before introducing the correct amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding Howler®. Maintain circulation while loading and spraying. Do not mix more Howler® than can be used in 24 hours.

### Spray volume

For in furrow spray applications, use at least 5 gallons of total volume per acre in water-based sprays.

### Tank mixing

Do not combine Howler® in the spray tank with other pesticides, surfactants, adjuvants, or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective, and non-injurious under your use conditions. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

To ensure compatibility of tank-mix combinations, they must be evaluated prior to use. To determine the physical compatibility of this product with other products, use a jar test. Using a quart jar, add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, and then emulsifiable concentrates last. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

## **DIRECTIONS FOR CHEMIGATION**

### **General Requirements:**

Apply this product only through sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move; or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

### **Spray preparation:**

First, prepare a suspension of Howler® in a mix tank. Fill tank  $\frac{1}{2}$  to  $\frac{3}{4}$  of the amount of water for the area to be treated. Start mechanical or hydraulic agitation. Add the required amount of Howler®, and then the remaining volume of water (See Application Rates Table). Then set the system to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start system and uniformly inject the suspension of Howler® into the irrigation water line so as to deliver the correct rate of Howler® per acre. Inject the suspension of Howler® with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. Howler® is to be metered continuously for the duration of the water application.

Do not combine Howler® with other pesticides, surfactants, adjuvants, or fertilizers for application through chemigation equipment unless prior experience has shown the combination to be physically compatible, effective and non-injurious under conditions of use.

## **Application Instructions for All Types of Chemigation:**

1. Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues, may cause product to lose effectiveness or strength.
2. Determine the treatment rates as indicated in the directions for use and make proper dilutions.
3. Prepare a solution in the chemical supply tank by filling the tank with part of the required water, adding the product as required, and adding the remaining water. Utilize agitation to keep solution in suspension.

## **Chemigation Systems Connected to Public Water Systems**

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

### **Sprinkler Chemigation Safety Requirements:**

1. The system must contain a functional check valve, vacuum relief valve and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

### **Drip (Trickle) Chemigation Safety Requirements:**

1. The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

## TARGET PLANT DISEASES

*Rhizoctonia, Pythium, Fusarium\*, Phytophthora, Sclerotinia, Colletotrichum, Botrytis*

\*Not for use in California.

### APPLICATION RATES

Repeat at 7- to 21-day intervals as needed. Thoroughly cover plant foliage and soil surfaces with spray solution.

Pre-harvest Interval (PHI) = 0 days.

CROP	APPLICATION METHOD	APPLICATION RATE
<b>Berries and Small Fruits</b> , including Blackberries*, Blueberries*, Currants*, Elderberries*, Gooseberries*, Huckleberries*, Loganberries*, Raspberries*, Strawberries, and Grapes	Greenhouse Soil Drench	67 – 100 oz Howler®/100 gal water
	Nursery soil drench	67 – 100 oz Howler®/100 gal water
	In Furrow Spray or Transplant Starter Solution	5 – 15 pounds Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Greenhouse Chemigation	67 – 100 oz Howler®/100 gal water
	Foliar Spray	5 – 15 pounds Howler®/acre
	Field Chemigation or Drench	5 – 15 pounds Howler®/acre
	<b>Cucurbit Vegetables</b> , including Cucumbers, Cantaloupe, Melons, Gourds, Pumpkins, Winter Squash, Squash, Zucchini	Greenhouse Soil Drench
In Furrow Spray or Transplant Starter Solution		5 – 15 pounds Howler®/acre or 67 – 100 oz Howler®/100 gal water
Greenhouse Chemigation		67 – 100 oz Howler®/100 gal water
Foliar Spray		5 – 15 pounds Howler®/acre
Field Chemigation or Drench		5 – 15 pounds Howler®/acre
Greenhouse soil incorporation		1.75 – 8.5 pounds Howler®/cubic yard



<b>CROP</b>	<b>APPLICATION METHOD</b>	<b>APPLICATION RATE</b>
<b>Fruiting Vegetables</b> , including Eggplant, Bell Peppers, Sweet and Hot Peppers, Okra, Tomatillos, and Tomatoes	Greenhouse Soil Drench	67 – 100 oz Howler®/100 gal water
	In Furrow Spray or Transplant Starter Solution	5 – 15 lb Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Greenhouse Chemigation	67 – 100 oz Howler®/100 gal water
	Foliar Spray	5 – 15 lb Howler®/acre
	Field Chemigation or Drench	5 – 15 lb Howler®/acre
	Greenhouse Soil Incorporation	1.75 – 8.5 lb Howler®/cubic yard soil
<b>Hydroponic Crops</b> , including Cucumbers, Tomatoes, Lettuce, Strawberries, Herbs, and Spices	Inject into the hydroponic system with each water change or every 5 to 7 days. Pre-soak transplants in the same solution mix.	1.8 – 6 oz Howler®/1000 sq ft
<b>Leafy Vegetables and Cole Crops</b> , including Arugula*, Chervil*, Endive*, Lettuce (head and leaf), Parsley*, Radicchio*, Spinach*, Swiss Chard*, Broccoli*, Brussels Sprouts*, Cabbage*, Cauliflower*, Collards*, Kale*, and Mustard Greens*	Greenhouse Soil Drench	67 – 100 oz Howler®/100 gal water
	In Furrow Spray or Transplant Starter Solution	5 – 15 lb Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Foliar Spray	5 – 15 lb Howler®/acre
	Field Chemigation or Drench	5 – 15 lb Howler®/acre
<b>Beans, Peas, and Dry Pulses*</b>	Foliar or Directed Spray	5 – 15 lb Howler®/acre
	In Furrow Spray or Transplant Starter Solution	5 – 15 lb Howler®/acre or 67 – 100 oz Howler®/100 gal water

<b>CROP</b>	<b>APPLICATION METHOD</b>	<b>APPLICATION RATE</b>
<b><i>Peanut*</i></b>	Foliar Spray	5 – 15 pounds Howler®/acre
	In Furrow Spray or Transplant Starter Solution	5 – 15 pounds Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Field Chemigation or Drench	5 – 15 pounds Howler®/acre
<b><i>Stalk, Stem and Leaf Petiole Vegetables*</i></b> , including Asparagus, Celery, Fennel, Kohlrabi, and Rhubarb	Greenhouse Soil Drench	67 – 100 oz Howler®/100 gal water
	In Furrow Spray or Transplant Starter Solution	5 – 15 lb Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Foliar Spray	5 – 15 pounds Howler®/acre
	Field Chemigation or Drench	5 – 15 pounds Howler®/acre
<b><i>Tobacco and Other Specialty Crops,</i></b> Tobacco**, Buckwheat, Guar, Plantago, Ovata, Ginseng, Sapodilla, Guayule, and Meadowfoam	Greenhouse Soil Drench	67 – 100 oz Howler®/100 gal water
	Nursery Soil Drench	67 – 100 oz Howler®/100 gal water
	In Furrow Spray or Transplant Starter Solution	5 – 15 lb Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Greenhouse Chemigation	67 – 100 oz Howler®/100 gal water
	Foliar or Directed Spray	5 – 15 pounds Howler®/acre
	Field Chemigation or Drench	5 – 15 pounds Howler®/acre
<b><i>Root and Tuber Vegetables*</i></b> , including Potatoes, Sweet Potatoes, Yams, Jerusalem Artichoke, Cassava, Ginger, Carrots, and Parsnips (except Ginseng)	Field Chemigation or Drench	5 – 15 pounds Howler®/acre
<b><i>Bulb Vegetables*</i></b> , including Onions, Garlic, Shallots, and Chives	In Furrow Spray or Transplant Starter Solution	5 – 15 lb Howler®/acre or 67 – 100 oz Howler®/100 gal water
	Foliar Spray	5 – 15 pounds Howler®/acre
	Field Chemigation or Drench	5 – 15 pounds Howler®/acre

\* Not for use in California

\*\*Apply preventively for Black Shank and other listed Tobacco fungal pathogens

## STORAGE AND DISPOSAL

**Do not contaminate water, food or feed by storage or disposal.**

**Pesticide Storage:** Store in original container in a cool, dry place. Avoid overheating.

**Pesticide Disposal:** To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

**Container Handling:** Nonrefillable container. Do not reuse or refill this container.

Completely empty bag into application equipment. Then, offer for recycling if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

Uses of Howler® other than those specified on this label are not licensed or otherwise authorized through the purchase of this product and the use of this product for other purposes including research and/or experimental uses are expressly prohibited without the written consent of AgBiome Innovations® Inc.

# CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

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The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risk inherently associated with the use of this product. Plant injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather, plant conditions, presence of other materials or other influencing factors in the use of this product, which are beyond the control of AgBiome Innovations®, Inc. or Seller. To the extent consistent with applicable law, Buyer and User agree to hold AgBiome Innovations®, Inc. and Seller harmless for any claims relating to such factors.

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