

SDS per US OSHA Hazard Communication Standard (HazCom) 2012, 29 CFR §1910.1200

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. PRODUCT IDENTIFIER

Product name: NemaGard™ 10% WP
Product Type: Nematicide
EPA Registration No. 82074-16
Active Ingredient: *Purpureocillium lilacinum* strain PL11
CAS No.: Not applicable

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Identified uses: For use as a bionematicide on listed crops
Uses advised against: Any use not listed on the label

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Name: Certis USA LLC
Address: 9145 Guilford Road, Suite 175, Columbia, Maryland 21046, USA
Phone Number: +1 (800) 847-5620 (in the US); +1 (301) 604-7340 (outside the US)
Website: www.CertisBio.com

1.4. EMERGENCY TELEPHONE NUMBER

Emergency number: +1 (800) 255-3924 (in the US); +1 (813) 248-0585 (outside the US)
[service provided by ChemTel under Contract Number MIS0001530]

SECTION 2: HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

OSHA Hazard Classification: Not classified.
Signal Word: None.
Hazard Statements: None.
Pictogram: None.
Precautionary Statements: None.

2.2. OTHER HAZARDS

Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient		CAS #	% w/w
Purpureocillium lilacinum strain PL11 (minimum 7.5 x 10 ⁹ viable spores/g of product)		Not applicable	10%
Hazardous Ingredient(s)	Classification	CAS #	% w/w
None	N/A	N/A	N/A

SECTION 4: FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

Treat symptomatically.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

May cause minor skin or eye irritation.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. EXTINGUISHING MEDIA

Suitable Extinguishing Media: Dry chemical, foam, carbon dioxide, water.

Unsuitable Extinguishing Media: None known.

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous combustion products: None known.

5.3. ADVICE FOR FIREFIGHTERS;

Protection of Firefighters: Keep upwind of fire. Wear protective clothing and self-contained breathing apparatus. Fight fire from a safe distance.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

For non-emergency personnel: Avoid substance contact. Ensure adequate ventilation. Evacuate the area and observe emergency procedures.

For emergency responders: Use appropriate personal protective equipment. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

6.2. ENVIRONMENTAL PRECAUTIONS

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.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Methods for Containment and Clean-Up: Caution: spillages may be slippery. For small spills, contain the spill and stop the flow. Sweep up loose material keeping dust to a minimum. Transfer to a suitable container for disposal or recovery. Seal the container and handle in an approved manner. Reclaim material if possible.

Other Information: Dispose of in accordance with all Federal, State and local procedures.

6.4. REFERENCE TO OTHER SECTIONS

Refer to Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

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. As soon as possible, wash thoroughly and change into clean clothing.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

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

Pesticide Storage: Store refrigerated. Store in original container.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

Substance	Occupational Exposure Limits
<i>Purpureocillium lilacinum</i> strain PL11	<u>OSHA PELs:</u> not established
	<u>ACGIH TLVs:</u> not established

8.2. EXPOSURE CONTROLS

Wear protective equipment to comply with good occupational hygiene practice. Do not eat, drink or smoke at the workplace.

8.2.1. 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.

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.

8.2.2. PERSONAL PROTECTIVE EQUIPMENT:

Applicators and other handlers must wear:

RESPIRATORY PROTECTION

- 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.)

EYE/FACE PROTECTION

- Not required.

SKIN PROTECTION

- Long-sleeved shirt
- Long pants
- Socks and shoes

8.2.3. ENVIRONMENTAL EXPOSURE CONTROLS

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

<i>Physical Property</i>	<i>Result</i>
Appearance:	Grayish fine powder
Odor:	Odorless
Odor Threshold:	Not determined
pH:	8.46 nominal (range 7 – 9)
Melting Point / Freezing Point:	Not applicable
Initial Boiling Point:	Not applicable

<i>Physical Property</i>	<i>Result</i>
Boiling Range:	Not applicable
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability (solid, gas):	Not determined
Lower & Upper Flammability Limits:	Not determined
Vapor Pressure:	Not applicable
Vapor Density (Air = 1):	Not determined
Density:	0.850 g/cm ³
Solubility:	Not determined
Partition Coefficient (n-octanol/water):	Not applicable
Auto-ignition Temperature:	Not determined
Decomposition Temperature:	Not applicable
Viscosity:	Not applicable
Other relevant properties:	Not applicable

9.2. OTHER INFORMATION

Not available.

SECTION 10: STABILITY AND REACTIVITY

10.1. REACTIVITY

No known or expected hazardous reactions when handled and stored according to stated provisions.

10.2. CHEMICAL STABILITY

Chemically stable under the conditions of storage, handling and use.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS

No known or expected hazardous reactions when handled and stored according to stated provisions.

10.4. CONDITIONS TO AVOID

None known or expected.

10.5. INCOMPATIBLE MATERIALS

None known or expected.

10.6. HAZARDOUS DECOMPOSITION PRODUCTS

None known or expected.

Revision Date: 2022-04-27

Replaces: N/A

Reason for Revision: New Product

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. LIKELY ROUTES OF EXPOSURE

Oral, dermal, ocular, inhalation

11.2 SYMPTOMS RELATED TO PHYSICAL, CHEMICAL, AND/OR TOXICOLOGICAL CHARACTERISTICS

May cause minor skin or eye irritation.

11.3 EFFECTS (DELAYED/IMMEDIATE/CHRONIC) FROM SHORT- AND LONG-TERM EXPOSURE

See section 4.

11.4 ACUTE TOXICITY

Test	Results	US EPA Toxicity Category
Acute oral LD ₅₀	>4.8 x 10 ⁹ viable spores/animal; no toxicity, pathogenicity, or infectivity	IV
Acute dermal LD ₅₀	>2,000 mg/kg bw	III
Acute inhalation LC ₅₀	>4.32 x 10 ⁸ viable spores/animal; no toxicity, pathogenicity, or infectivity	IV
Eye irritation:	Nonirritant (IVIS = -0.5)	IV
Skin irritation:	Mildly irritating	III
Respiratory or skin sensitization:	Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.	Not applicable

11.5 OTHER INFORMATION ON ADVERSE HEALTH EFFECTS

Test	Results
Repeated-Dose Toxicity	No information available
Genetic Toxicity	No information available
Reproductive Toxicity	No information available
Carcinogenicity	<u>NTP</u> : not listed <u>IARC</u> : not listed <u>OSHA</u> : not listed

SECTION 12: ECOLOGICAL INFORMATION

12.1. TOXICITY

Species	Test	Study Duration	Conditions	Test substance	Results
Japanese quail (<i>Coturnix japonica</i>)	Avian acute oral	30-day	Gavage	PL11 TGAI	LD ₅₀ > 5.81 x 10 ⁸ CFU/bird/day

Species	Test	Study Duration	Conditions	Test substance	Results
Zebra fish (<i>Danio rerio</i>)	Acute freshwater fish	30-day	Semi-static	PL11 TGAI	LC ₅₀ > 10 ⁶ CFU/mL
Daphnid (<i>Daphnia magna</i>)	Acute freshwater invertebrate	21-day	Static-renewal	PL11 TGAI	LC ₅₀ > 10 ⁶ CFU/mL
Parasitic wasp (<i>Pediobius foveolatus</i>)	Acute nontarget insect	27-day	Dietary	PL11 TGAI	LC ₅₀ > 3,250 ppm
Green lacewing (<i>Chrysoperla rufilabris</i>)	Acute nontarget insect	12-day	Dietary	PL11 TGAI	LC ₅₀ > 3,250 ppm
Ladybird beetle (<i>Hippodamia convergens</i>)	Acute nontarget insect	6-day	Dietary	PL11 TGAI	LC ₅₀ > 3,250 ppm

12.2. PERSISTENCE AND DEGRADABILITY

Purpureocillium lilacinum is a naturally-occurring soil microorganism commonly found in agricultural settings (e.g., water, soils and plant roots) and is present on fresh produce with no known adverse effects.

12.3. BIOACCUMULATIVE POTENTIAL

Purpureocillium lilacinum populations are expected to decline significantly after application. *Purpureocillium lilacinum* is not expected to bioaccumulate.

12.4. MOBILITY IN SOIL

Purpureocillium lilacinum occurs naturally in soil. It is not expected to move or leach

12.5. OTHER ADVERSE EFFECTS

None noted. See 12.2 above.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. WASTE TREATMENT METHODS

Pesticide Disposal: To avoid wastes, use all material in this container by application according to experimental directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program.

Container Handling: Nonrefillable container. Do not reuse or refill this container. Triple rinse container promptly after emptying. 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.

SECTION 14: TRANSPORTATION INFORMATION

UN NUMBER	UN PROPER SHIPPING NAME	TRANSPORT HAZARD CLASS(ES)
None. Not applicable.	None. Not applicable.	Not applicable.
PACKING GROUP	ENVIRONMENTAL HAZARDS	SPECIAL PRECAUTIONS FOR USER
Not applicable.	None.	None.
TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL73/78 AND THE IBC CODE		
Not applicable.		

SECTION 15: REGULATORY INFORMATION

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

EPA/FIFRA		
This product is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements may differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticidal chemicals. The pesticide label also includes other important information, including directions for use.		
EPA Signal Word: Caution		
OSHA	TSCA STATUS	CERCLA REPORTABLE QUANTITY
Not applicable	Exempt	Not applicable
SARA TITLE III	RCRA STATUS	OTHER
Section 302: Not applicable Section 311/312: Not applicable Section 313: Not applicable	Not applicable	None

SECTION 16: OTHER INFORMATION

ABBREVIATIONS

OSHA	US Occupational Health and Safety Administration
EPA	US Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TSCA	Toxic Substances Control Act
PEL	Permissible exposure limit
STOT	Specific target organ toxicity
TLV	Threshold limit value
TWA	Time-weighted average
LD ₅₀	Median lethal dose: dose resulting in 50% mortality in the test species
LC ₅₀	Median lethal concentration: concentration resulting in 50% mortality in the test species
EC ₅₀	Median effective concentration: concentration resulting in 50% reduction in algae growth or algae growth rate, or <i>Daphnia</i> immobilization

NemaGard™ 10% WP

PPE	Personal protective equipment
PBT	Persistent, bioaccumulative, and toxic
vPvB	Very persistent, very bioaccumulative
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (Marine Pollution 1973/1978 ,

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