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Actinovate® SP Fact Sheet

Actinovate® SP is a 100% soluble biological fungicide for control of damping off and root rot fungi such as *Pythium*, *Rhizoctonia*, *Fusarium*, *Phytophthora*, *Verticillium* and others. Actinovate® SP can also increase plant size, vigor and root mass. Actinovate® Sp is also labeled as a spray application for foliar diseases such as powdery and downy mildew, *Botrytis*, *Alternaria* and others.

Active Ingredient:

* *Streptomyces lydicus* strain WYEC 108
(1×10^7 CFU/gr.)

Description:

Streptomyces lydicus strain WYEC 108 is a *saprophytic rhizosphere* colonizing *Actinomycete*. It was isolated from the roots of a linseed plant in an area that exhibited a natural suppression of soil pathogens. Under proper conditions (moisture and temperature) the *Streptomyces* spores will germinate and begin forming mycelia that will attach to the root system of the host plant. As the root system grows, the mycelia colonies grow with it, eventually covering the entire *rhizosphere*. When active the *Streptomyces* produce several by-products beneficial to plants. One by-product, called *siderophores*, reduce minerals to a form more easily absorbed by plants. Another, chitinase, is destructive to the outer walls of some fungi. The bacteria also produces several antibiotics and antifungal secondary metabolites that are destructive to disease causing pathogens..

Modes Of Anti-Fungal Action:

Exclusionism, mycoparasitism, antibiotics, enzymes

Application Methods:

For soil diseases: *S. lydicus* can be applied as a soil amendment, as a soil drench, spray, root dip etc..

For Foliar Diseases: *S. lydicus* can be applied through misting systems, boom sprayers or any other foliar application device.

Diseases Suppressed:

Soil: *Pythium*, *Rhizoctonia*, *Fusarium*, *Postia*, *Phytophthora*, *Sclerotinia*, *Geotrichum*, *Verticillium*, *Gaeumannomyces*, and others

Foliar: *Powdery mildew*, *Alternaria*, *Botrytis*, and others

Temperature Tolerance:

Spores of *Streptomyces lydicus* strain WYEC 108 are regularly frozen for storage at -0° F. Temperatures above 130° F. will sterilize the spores. Germinated spores (which occurs when the *Streptomyces* is added to potting soil, for instance) survive the same temperature range as long as there is a food source such as peat, bark or humates available as well as the proper moisture level.

PH Tolerance:

The *Streptomyces* can survive a PH range 5.0-9.1 but the range of optimal performance is 7.0-8.0.

Longevity:

The spore shelf life as packaged is guaranteed at 12 months. Germinated spores can live in excess of two years in the proper conditions (with moisture, food and oxygen). Storing in refrigerated conditions may extend the shelf life. Containers and bags are marked with an expiration date.

Chemical Compatibility:

Streptomyces lydicus is compatible with all chemical fungicides. Bactericides at levels above 75 ppm should not be used in conjunction with it.

UV Sensitivity:

The bacterium is not UV sensitive.

Labeled For Use On:

Areas: Greenhouse, Nursery, Turf, Interiorscapes, Agriculture

Crops: Turf, greenhouse and nursery ornamentals, greenhouse vegetables & herbs, fiber crops, trees (including tree seedlings to be transplanted to the field), all landscape plants, seed coating

REI:

1 hour for foliar sprays

For additional questions or specific technical inquiries please contact Matt Kowalski at 281-580-1643

MATERIAL SAFETY DATA SHEET

Actinovate® SP

I. PRODUCT INFORMATION

General Use: Biological fungicide
Chemical Formulation: N/A.
Common Name: Actinovate® SP
Molecular Weight: N/A

II. PHYSICAL PROPERTIES

Bulk Density: 5.5
Solubility in H₂O: 100% soluble
pH (apparent): 8.3
Appearance: pale white
Odor: slight odor of rich soil
Boiling Point (degC): N/A
Melting Point (degC): N/A
Evaporation Rate: N/A
Vapor Pressure: N/A

III. INGREDIENTS

<u>Components</u>	<u>% Range</u>
Inert Ingredients (confidential)	00.0371
<i>Streptomyces Lydicus WYEC 108</i>	99.9629

IV. HEALTH AND HAZARD INFORMATION

A. Toxicity: none
B. Carcinogenicity: N/A not listed by NTP, LARC, OSHA, ACGIH, ORHIOSH
C. Primary Route(s) of Exposure: Skin Contact, Ingestion
D. Health Effects of Over Exposure:
1. Inhalation: Nasal Irritation
2. Ingestion: Irritation of mucous membranes.
3. Skin: No negative side effects.
Wash with soap and water.
4. Eyes: Slight irritation may occur.
Flush with water.
E. Emergency and First Aid Measures:

1. Inhalation: Flush nose with water
2. Ingestion: Ingestion has shown no mammalian toxicity
3. Skin: Wash with soap and water.
4. Eyes: Flush with water for five minutes

V. FIRE AND EXPLOSION DATA

A. Fire: Not considered a fire hazard.
B. Explosion: Not considered an explosion hazard.

C. Fire Extinguishing Media: Water, CO₂, or dry chemicals may be used.

D. Precautions: No precautions are necessary under normal conditions of use. As with any dust avoid high concentrations

VI. PERSONAL PROTECTIVE GEAR

A. Eyes and Face: Though not necessary, safety glasses may be worn.
B. Respiratory: No respirator is required under normal conditions of use.
C. Skin: Though not necessary, gloves may be worn.
D. Shoes: Safety shoes are not necessary.

VII. STORAGE AND HANDLING

Actinovate® SP may be stored in all types of containers made of various materials of construction. Avoid contact with strong oxidizing agents.

VIII. SHIPPING INFORMATION

A. DOT Shipping Name: None
B. DOT Hazard Class: None
C. DOT Category: None
E. Reportable Qualities (RQ): None
F. HMIS: Personal Protective Code - A (Safety Glasses)
G. NFPA Rating: 0 (Health) - 0 (Flammability) - 0 (Reactivity)

IX. ENVIRONMENTAL PROTECTION PROCEDURES

A. Spill Response: No negative environmental impact. No special cleanup requirements
B. Waste Disposal: No negative environmental impact. No special preparation required for disposal.

This information presented in this Materials Safety Data Sheet (MSDS) is subject to revisions and is not all inclusive, but represented as the best information available to date. This information was drawn from recognized sources, believed to be reliable. However, Natural Industries, Inc. will not be responsible for damages of any kind resulting from the use or reliance upon such information. The product discussed is sold without warranty, expressed or implied, and upon conditions that purchasers shall perform their own verification and testing to determine its suitability for a particular purpose.

Prepared by:

Fred Sims Effective Date: February 16, 1998

Revisions: Matthew Kowalski

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