

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY**

Product Name: **Roots PHC Injectable for Trees; Roots Injectable for Trees (packets A & B combined)**

Product Identity: Mixed dry soluble microbial soil inoculant.

Recommended use

This product is a mixed dry soluble microbial soil inoculant for landscape use.

Supplier/Manufacturer

Lebanon Seaboard Corporation
1600 East Cumberland Street
Lebanon PA 17042
800-233-0628
(717-273-1685)

Emergency telephone numbers:

Chemtrec (Spill) 1-800-424-9300

Prosar (Health) 888-208-1368

2. HAZARDS IDENTIFICATION

Signal Word: Warning

Hazard Statements:

H333: May be harmful if inhaled repeatedly over prolonged periods. (Category 5)

H351: Suspected of causing cancer by prolonged/repeated inhalation. (Category 2)

*H361: Suspected of damaging fertility or unborn child. (Category 2)

*H362: May cause harm to breast-fed children.



Precautionary Statements for handling: See also Section 7.

P201: Get special instructions before use.

P202: Do not handle until all safety instructions have been read and understood.

P261: Avoid breathing dust.

P280: Wear gloves, eye protection and face protection.

P281: Use appropriate personal protective equipment as required to avoid breathing dust.

P308: If exposed or concerned, seek medical advice.

P405: Store locked up.

Keep out of reach of children.

Precautionary Statements for disposal - Dispose in accordance with all federal, state and local regulations. See also Section 13.

***Hazards not otherwise classified (HNOC):**

1. Formononetin (present at 0.22%) is classified as a phytoestrogen, as it mimics the effects of the female hormone estrogen. Formononetin is 10,000 to 15,000 times less potent than real estrogen (1,3-estradiol), and is naturally-occurring in common food plants, such as soy beans. Formononetin is also touted as a natural health food component. Since it has hormonal effects, it is investigated as a hormone and reproductive effector, although specific data regarding reproductive effects on adults or fetuses is not available.
2. The microbes contained in this product are strains of safe, typically harmless soil and water microbes, and are not associated with disease or infections under normal circumstances (Biosafety Level 1). However, reasonable precautions are in order. Handle as you would rich, dark soil or compost: keep it out of your mouth, eyes, lungs, and broken skin. Wash hands thoroughly after use. Remove and launder heavily soiled clothing separately before reuse. Persons with severely suppressed immune systems, such as those with advanced AIDS, or those taking anti-rejection drugs, or those undergoing chemotherapy should contact their physician before handling ordinary microbial products.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Packets A & B Combined:

Chemical Name	CAS No.	Weight %
Sand (crystalline silica)	14808-60-7	1 - 5
Kaolin clay	1332-58-7	1 - 5
Mycorrhizal Fungi spores	NA	0.5
Formononetin	485-72-3	0.2
Rhizosphere Bacteria*	68038-70-0	56 Million cfu/g
Nonhazardous ingredients	Various	Balance

*Note: Bacteria are present on a carrier (maltodextrin) and cannot be expressed as a percent weight due to their insignificant mass.

4. FIRST AID MEASURES

Eye Contact	Rinse eyes cautiously with water for several minutes. Remove any contact lenses if easy to do, and continue rinsing. If discomfort or irritation persists contact a physician.
Skin Contact	Wash with soap and water. If injury occurs, or if discomfort or irritation persists or rash occurs, contact a physician.
Inhalation	If inhaled and discomfort occurs, move to fresh air, and keep person at rest in a position comfortable for breathing. If difficulty in breathing occurs and/or persists, administer oxygen and get medical attention. If medical advice is needed, have product container or label on hand.
Ingestion	Rinse mouth. Drink Plenty of water. If you feel unwell, call a poison control center or seek medical attention. Do not induce vomiting of an unconscious person.

Self-protection of the first aider: Use any appropriate personal protective equipment as required for nuisance dusts.

Most important symptoms and effects, both acute and delayed: Nuisance dust irritation may occur with nasal discomfort under highly dusty conditions.

Indication of any immediate medical attention and special treatment needed: Treat Symptoms. Consult physician if discomfort or irritation persists. Get medical advice or attention if you feel unwell.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing media suitable to local circumstances and the surrounding environment. Options in this case include water, CO₂, ABC Dry Chemical extinguisher, or foam. Avoid stirring up dust extinguisher stream.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire, do not breathe fumes.

Explosion data

Sensitivity to mechanical impact: None

Sensitivity to static discharge: None

Note: Excessive amounts of any burnable dusts can produce explosive mixtures if allowed to disperse in the air in confined areas where ignition sources occur. Prevent excessive dust dispersal in areas of use, storage, or production.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and standard protective (bunker) gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures

Personal Precautions	Use dust mask and gloves as needed or other reasonable personal protective equipment as required to prevent contact with eyes or skin. Remove ignition sources prior to clean-up.
Environmental precautions	Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.
Methods for containment	Prevent further leakage or spillage, if safe to do so.
Methods for clean-up	Use dust mask and/or reasonable personal protective equipment as required to avoid breathing dusts. Moisten or cover powder spill with plastic sheet or tarp to minimize spreading. Take up mechanically, placing in appropriate containers for disposal. Avoid creating dust. Soak up excess with inert absorbent material. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Safe Handling	Get special instructions before use. Read and understand all safety precautions before handling. Ensure adequate ventilation, especially in confined areas. Use personal protective equipment as required to avoid breathing product dusts or mists, and to prevent eye contact. Wash hands thoroughly after handling.
Storage Conditions	Store locked up. Keep containers tightly closed in a cool, well-ventilated place. Keep out of the reach of children.
Incompatible materials	Avoid strong acids or alkali, or other reactive substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH*
Quartz silica	0.025 mg/m ³ (respirable)	(30 mg/m ³) ÷ (%SiO ₂ + 2)	3000 mg/m ³
Nuisance Dusts	15 mg/m ³ (TWA- inhalable)	15 mg/m ³ (TWA total) 50 mppcf (TWA total) 5 mppcf (TWA respirable)	Not Established

*IDLH refers to amounts that are "Immediately Dangerous to Life or Health"

Other Information: This product contains a significant amount (0.22% by weight) of a concentrated, insoluble isoflavanoid compound (formononetin) classed as a phytoestrogen, which can mimic the effects of the hormone estrogen in mammals. Formononetin is reportedly 10,000 to 15,000 times less potent hormonally than estrogen (1,3-estradiol). Formononetin occurs naturally in numerous foods including soy beans, fruits and grains. Still, avoid prolonged skin contact or inhalation to preclude the possibility of absorption of this concentrated hormonal compound. Avoid prolonged skin contact to preclude the possibility of skin absorption of the hormonal compound. Also avoid breathing dust of dry product or spray mist of dissolved product.

The bacteria contained in this product are strains of typically harmless soil and water bacteria, and do not cause infections under normal circumstances. However, reasonable precautions are in order. Handle as you would rich, dark soil or compost: keep it out of your mouth, eyes, lungs, and broken skin.

Engineering controls: Use with adequate ventilation and follow safe work practices to prevent dust buildup in air.

Individual protection measures

Wear protective gloves, protective clothing, eye protection, and face protection.

Eye protection	Safety glasses, or goggles if eye contact is likely
Skin and Body Protection	Gloves and standard work coveralls recommended.
Respiratory Protection	Dust mask recommended for dusty or misty conditions. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations.
General Hygiene	When using product, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid
Appearance	Fine powders
Color	Mixed, various
Odor	Slight herbal odor
Odor Threshold	No information available
pH	Not applicable
Melting point/freezing point	Not applicable
Boiling point / boiling range	Not applicable
Flash point	No information available
Evaporation rate	Not applicable
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	Not applicable
Vapor density	Not applicable
Bulk Density	0.4 to 0.6 g/cc
Water solubility	Miscible
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Oxidizing properties	Not an oxidizer

10. STABILITY AND REACTIVITY

Reactivity

Not particularly reactive

Chemical stability

Stable.

Possibility of Hazardous Reactions

May release heat and fumes when mixed in solution with incompatible reactive materials.

Hazardous polymerization

Will not occur.

Conditions to avoid

High heat, sparks and open flames, as some ingredients may be burnable.

Incompatible materials

Strong acids or alkali, or other reactive substances.

Hazardous Decomposition Products

May emit toxic fumes under fire conditions, such as Nitrogen oxides (NOx), Ammonia, Oxides of sulfur, Hydrogen chloride and Carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Routes of exposure: Ingestion, eyes (contact), skin (contact), dust inhalation

Symptoms	May irritate the digestive tract if ingested in quantity, causing nausea, vomiting and diarrhea.
Sensitization	No information available.
Germ cell mutagenicity	No information available
Carcinogenicity	Potential occupational carcinogen. Naturally mined minerals, like limestone typically contain sand (silica) at amounts ranging from 1 to 6%. Fine silica particulates are considered to be carcinogenic via repeated and prolonged inhalation. (IARC, ACGIH)
Reproductive toxicity	Formononetin - Investigated as a hormone and reproductive effector (Phytoestrogen).
STOT - single exposure	No information available
STOT - repeated exposure	No information available
Chronic toxicity	Lungs-Silicosis, cancer
Target Organ Effects	Lungs-Silicosis, cancer
Aspiration hazard	No information available

12. ECOLOGICAL INFORMATION

Based on composition, this material is not expected to be harmful to aquatic life.

Persistence and degradability	Approximately 75% of the composition readily biodegrades.
Bioaccumulation	Not likely to bioaccumulate
Other adverse effects	No information available

13. DISPOSAL CONSIDERATIONS

This material, as supplied is not a hazardous waste according to federal regulations (40 CFR 261).

Disposal of wastes:

- This product is a non-hazardous waste material suitable for approved solid waste landfills.
- No EPA Waste Numbers are applicable for this product's components.
- Dispose of in accordance with Local, State, and Federal regulations.

Contaminated packaging

No US Federal special packaging considerations at the date of this document. Follow local regulations.

14. TRANSPORT INFORMATION

DOT:	Not Regulated	ADR:	Not Regulated
Proper Shipping Name:	Non Regulated	ADN:	Not Regulated
Hazard Class:	Not Applicable	RID:	Not Regulated
IATA:	Not Regulated	IATA:	Not Regulated
Proper Shipping Name:	Non Regulated	TDG:	Not Regulated
Hazard Class:	Not Applicable	ICAO:	Not Regulated
IMDG/IMO	Not Regulated	MEX:	Not Regulated
Hazard Class	Not Applicable		
Marine Pollutant	No		

IMDG: Not a dangerous good.
ICAO/IATA: Not a dangerous good.

15. REGULATORY INFORMATION

TSCA (USA): Complies
General Product Information: This product is not federally regulated as a hazardous material.
Clean Air Act: No information is available.

SARA 313 Superfund Amendments: This product contains no chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal regulations, Part 372.

SARA 311/312 Hazard Categories

Acute: No
 Chronic: Yes
 Fire: No
 Sudden release of pressure: No
 Reactive: No

CERCLA: This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material .

Clean Water Act: This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

State Regulations

State Right-to-Know: Crystalline silica: CA, IL, MA, NH, NY, NJ, PA, RI

California Proposition 65: This product may contain detectable quantities of a substance (sand mineral: silica) known to the State of California to cause cancer by prolonged, repeated inhalation over a long period of time (months to years).

International Inventories

Component Analysis – WHMIS IDL Crystalline silica.

16. OTHER INFORMATION

This product contains a significant amount (0.22% by weight) of a concentrated, insoluble isoflavanoid compound (formononetin) classed as a phytoestrogen, which can mimic the effects of the hormone estrogen in mammals. Formononetin is reportedly 10,000 to 15,000 times less potent hormonally than estrogen (1,3-estradiol). Formononetin occurs naturally in numerous foods including soy beans, fruits and grains. Formononetin is also touted as a natural health food component. Since it has hormonal effects, it is investigated as a hormone and reproductive effector, although specific data regarding reproductive effects on adults or fetuses is not available. Avoid prolonged skin contact to preclude the possibility of skin absorption of the hormonal compound. Also avoid breathing dust of dry product or spray mist of dissolved product.

Disclaimer

The information provided in this material safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.