

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

Product Name: **Roots PHC Root Dip; Roots Root Dip**

Product Identity: This product is a plant root inoculant in a water-activated gel matrix.

Recommended use: For inoculating roots of trees, shrubs, flowers, and small plants prior to planting.

Supplier/Manufacturer

**Lebanon Seaboard Corporation**

**1600 East Cumberland Street**

**Lebanon PA 17042 USA**

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 and Hazard Category:**

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

H351: Suspected of causing cancer by prolonged/repeated inhalation, due to fine sand content. (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: Obtain special instructions before use.

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

P260: Do not breathe dust.

P261: Avoid breathing dust.

P263: Avoid contact during pregnancy or while nursing.

P264: Wash hands and exposed skin thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P281: Use appropriate personal protective equipment as required to avoid breathing dust. 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. The bacteria contained in this product are strains of typically harmless soil and water bacteria, 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.
2. \*Formononetin (present at 0.11%) 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.

- 3. Very slippery when wet.

Unknown acute toxicity: <1% of the mixture consists of ingredients of unknown toxicity

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Ingredient	CAS#	%
Humate*	68514-28-3	25 - 30
Greensand*	1317-57-3	10 - 15
Kaolin Clay (with sand)*	1332-58-7	3 - 5
Citric Acid	77-92-9	0.5 - 0.9
Talc	14807-96-6	0.1 - 0.5
Formononetin	485-72-3	0.11
Beneficial bacteria <sup>‡</sup>	68038-70-0	6.2 Million cfu/g
Ectomycorrhizal Fungi spores	NA	209,000 spores /g
Endomycorrhizal Fungi spores	NA	116 spores/g

\* Naturally mined minerals, like humate, kaolin, and greensand typically contain silica (sand) at amounts ranging from 1 to 6%. Fine silica particulates are considered as carcinogenic via repeated and prolonged inhalation. Product is expected to contain a significant amount of fine sand >1%.

<sup>‡</sup>Bacteria are provided on a carrier of maltodextrin.

**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 occurs and persists contact a physician.
- Skin Contact**            Wash with soap and water.
- 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. Product has a very low toxicity. 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. Product is very slippery when wet. Be cautious to avoid falls.

Most important symptoms and effects, both acute and delayed: Nuisance dust irritation may occur with nasal discomfort under highly dusty conditions. Product can draw water from skin with prolonged contact, resulting in a drying effect, which can be mildly irritating. Ingestion of significant quantities can irritate digestive tract.

Indication of any immediate medical attention and special treatment needed: Treat Symptoms. Consult physician if discomfort or irritation persists. Product can draw water from skin with prolonged contact, resulting in a drying effect, which can be mildly irritating. Washing skin and applying hand lotion or skin moisturizer will typically resolve this. 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, CO<sub>2</sub>, ABC Dry Chemical extinguisher, or foam. Avoid stirring up dust extinguisher stream.

**Specific hazards arising from the chemical**  
 Product is very slippery when wet. Be cautious to avoid falls.  
 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. Product is very slippery when wet. Be cautious to avoid falls.

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment, and emergency procedures**

Personal Precautions	Use dust mask as needed or other reasonable personal protective equipment as required to prevent excessive dust inhalation. When wet, product causes extremely slippery conditions.
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. Take up mechanically, and use as originally intended or place in appropriate containers for disposal. Avoid creating dust. When wet, product causes extremely slippery conditions. Remove all residue from floor to avoid future slipping accidents.

**7. HANDLING AND STORAGE**

Safe Handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Wash hands after handling. Product is extremely slippery when wet. Clean up spills thoroughly to prevent future slipping accidents. Do not eat, drink or smoke when using this product. 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.
Storage Conditions	Keep containers tightly closed and dry to prevent water-absorption. Store locked up.
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
Quartz silica	0.025 mg/m <sup>3</sup> (respirable)	30 mg/m <sup>3</sup> ÷ (%SiO <sub>2</sub> + 2)	25 mg/m <sup>3</sup> (cristobalite, tridymite); 50 mg/m <sup>3</sup> (quartz, tripoli)
Nuisance Dusts	10 mg/m <sup>3</sup> (TWA- Total dust)	15 mg/m <sup>3</sup> (TWA total) 50 mppcf (TWA total) 5 mppcf (TWA respirable)	Not Established

Other Information: Product is of low toxicity by ingestion.  
 The bacteria in this product are typically harmless to ordinary healthy people under normal circumstances (Biosafety Level I). However, normal hygiene practices are in order.

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

**Individual protection measures** Use appropriate personal protective equipment as required to avoid breathing dust.

Eye protection	Safety glasses, or goggles if eye contact is likely. Not needed under normal use.
Skin and Body Protection	Gloves recommended for handling.
Respiratory Protection	Dust mask recommended for dusty 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	Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Avoid breathing dust. Remove and launder contaminated clothing before reuse. Handle as you would rich, dark soil or compost: keep it out of your mouth, eyes, lungs, and broken skin.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical state	Solid
Appearance	Granules
Color	Various, mostly black
Odor	slight
Odor Threshold	No information available
pH	5.9 - 6.9 (1% aqueous solution)
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	approx. 0.77 g/cc ( 48 Lbs per cubic ft)
Water solubility	Mostly insoluble in water, but absorbs water and forms a slippery gel.
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 material may burn.

**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	Mild drying of skin with prolonged contact. May irritate digestive tract if eaten in quantity.
Sensitization	None known.
Germ cell mutagenicity	None
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

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The bacteria contained in this product are strains of typically harmless soil and water bacteria, 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.

**12. ECOLOGICAL INFORMATION**

Non toxic to terrestrial or aquatic life.

The bacteria and fungi in this product are not harmful to animals or plants, including aquatic life, and they are naturally occurring in forest soil ecosystems. No adverse ecological effects are reported or expected from normal use or from accidental spill of this product.

Fish toxicity: None.

Daphnia toxicity: None.

Partially Biodegradable: Can increase BOD and COD temporarily.

Persistence and degradability	Partially biodegradable.
Bioaccumulation	Not expected to bioaccumulate, based on composition.
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**

<b>DOT:</b>	Not Regulated	<b>ADR:</b>	Not Regulated
Proper Shipping Name:	Non Regulated	<b>ADN:</b>	Not Regulated
Hazard Class:	Not Applicable	<b>RID:</b>	Not Regulated
<b>IATA:</b>	Not Regulated	<b>IATA:</b>	Not Regulated
Proper Shipping Name:	Non Regulated	<b>TDG:</b>	Not Regulated
Hazard Class:	Not Applicable	<b>ICAO:</b>	Not Regulated
<b>IMDG/IMO</b>	Not Regulated	<b>MEX:</b>	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.  
**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).

**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 .

**State Regulations – General:** This product is not regulated by any State as a hazardous material.  
**State Right-to-Know Components:** Crystalline silica: CA, IL, MA, NH, NY, NJ, PA, RI

California Proposition 65: This product contains substances (silica sand mineral) known to the state of California to cause cancer by repeated and prolonged inhalation over long time periods.

**Component Analysis – WHMIS IDL** No components are listed in the WHMIS IDL.

**16. OTHER INFORMATION**

The fungi contained in this product are naturally-occurring, harmless species that are beneficial to plants. They are not associated with disease in plants, animal, or man, and they have not been genetically modified.

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.