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1. PRODUCT INFORMATION

1.1 Product Identifier:	Optimum Rhizo (Legume Inoculant)
1.2 Relevant uses:	For application to legume seed at or prior to sowing
1.3 Supplier details:	

Company Details

Name: Ad Terram Treatment Technologies B.V.	Emergency Tel. No. +31(0)228 593813 (after hours)
Address: De Veken 106, 1716 KG, Opmeer	Postal Address: De Veken 106, 1716 KG, Opmeer
Tel. No. +31 (0)228 593813	E-mail Address: info@ad-terram.nl

2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture:**

Non-hazardous substance. Non dangerous goods. Not classified as Hazardous according to the criteria of NOHSC.

2.2 Label elements:

GRAS – hazard labels not applicable.

2.3 Other hazards:

Dangerous goods class & subsidiary risk	Not applicable
Hazchem code:	Not applicable
Hazard class:	Not applicable
Risk phrases	Not applicable
Safety phrases:	Not applicable

3. COMPOSITION**3.1 Substances**

Hazardous Components:	None
Composition:	All components are non-hazardous



Ingredient (common name):	Rhizobium / Bradyrhizobium / Sinorhizobium spp. nitrogen fixing bacteria. All microbial species guaranteed to be GM free.
CAS Number:	N/A
Proportion (by weight):	Rhizobium / Bradyrhizobium / Sinorhizobium spp. nitrogen fixing bacteria – 100%

3.2 Mixtures

Hazardous Components:	None
Composition:	All components are non-hazardous

4. FIRST AID MEASURES

4.1 First aid measures

Product In Eye:	Avoid contact with eyes. May irritate the eyes. Flush eyes with flowing water for at least 15 minutes. If irritation persists, continue to flush with flowing water and seek medical attention.
Product On Skin:	Wash off with water.
Product Inhalation:	If difficulty in breathing occurs, move affected person to fresh air. Loosen clothing to ease breathing. Seek immediate medical attention.
Product Ingested:	Maybe harmful if swallowed. Rinse affected persons mouth with clean water continuously. If irritation persists, seek immediate medical attention. Skin If irritation develops seek medical attention. Remove and wash contaminated clothing before reuse.

4.2 Most important symptoms and effects, both acute and delayed

Not applicable.

4.3 Indication of any immediate medical attention and special treatment needed

Not applicable.

5. FIRE FIGHTING MEASURES



5.1 Extinguishing Media Small Fires: Large Fires:	Call the Fire Brigade. Ensure that an escape path is available from any fire.
5.2 Special hazards	
Flammability:	May be combustible at high temperatures
Products of combustion:	Suitable extinguishing media Foam, alcohol foam, CO2, dry chemical, water fog.
Hazardous combustion products	Burning will not create noxious fumes.
Explosion Hazards in presence of mechanical impact or static discharge:	Not a fire or explosion hazard when stored under normal conditions.
5.3 Advice for firefighters	
Protective Clothing:	Fire fighters should wear butyl rubber boots, gloves and body suit and a self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions:	Spills Wear elbow length rubber gloves and half facepiece respirator.
6.2 Environmental Precautions:	Collect and put back into airtight containers.
6.3 Methods and materials for containment and cleaning up:	Wash off any contaminated surface with water and detergent. Use disinfectants if possible.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:	Normal care in handling. Do not remove from original container until ready to use - avoid contaminating the culture.
7.2 Conditions for safe storage:	Storage Store in the closed original container in a dry area, within a temperature range of 4 - 10°C.
7.3 Specific end use	This product is only to be used for seed coating

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters:	
Occupational Exposure Limits:	None allocated
8.2 Exposure Controls:	
Personal protection - Respiratory:	Wear a half face piece respirator or dust mask.
Personal protection - Hands:	Wear protective gloves
Personal protection - Eyes:	Chemical goggles, safety glasses or face shield.



Personal protection - Skin:	Elbow length rubber gloves, overalls, apron and boots are necessary to prevent skin contact.
Hygienic practices:	Open wounds or skin surface disruptions should be covered with a chemical resistant patch to minimize absorption risks. Clean clothing should be worn daily to avoid possible long-term build-up of the product leading to chronic overexposure. Emergency eye wash must be readily available within work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Dry off-white powder in a glass vial.
Composition:	$\geq 5 \times 10^{11}$ /g viable Rhizobium / Bradyrhizobium / Sinorhizobium spp. bacteria in a glass vial. Product under vacuum.
Odour:	Mild earthy odour
pH:	6.5 – 7.0
Density (SG):	N/A
Solubility:	Solubility in water Soluble
Boiling point:	N/A
Flash point:	N/A
Evaporation rate	N/A
Specific gravity	(H ₂ O=1) 0.85
Particle size	> 10 μm
Flammable limit:	lower N/A, upper N/A
Moisture content	1.5 – 2.5%

10. STABILITY AND REACTIVITY

10.1 Reactivity:	Non-corrosive
10.2 Chemical Stability:	Stable while stored under vacuum.
10.3 Possibility of hazardous reactions	None
10.4 Conditions To Avoid:	Extreme heat and oxidizing agents
10.5 Incompatible materials	Avoid storage with compounds that will react with aluminium foil cap or butyl rubber bung.
10.6 Hazardous decomposition products	Will not emit noxious fumes.
10.7 Hazardous polymerization	Will not occur.
10.8 Conditions to avoid	Extremes in temperature. Direct sunlight.



11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Routes of exposure:	Ingestion, inhalation, eyes, and skin.
Ingestion:	Maybe harmful if swallowed.
Inhalation:	Prolonged inhalation may lead to respiratory tract irritation.
Eye:	Prolonged or repeated exposure may cause mechanical irritation.
Skin	Prolonged or repeated exposure may cause irritation, redness, and inflammation.
Effects of overexposure	Long term exposure may cause mechanical irritation of the eyes as well as skin and respiratory tract irritation
Existing conditions	Aggravated by exposure May provoke asthmatic response in persons with asthma who are sensitive to airway irritants.
Carcinogenicity	No information available.

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity:	No data available
12.2 Persistence and biodegradability:	Non-persistent, fully biodegradable
12.3 Bioaccumulative potential:	Does not bioaccumulate
12.4 Mobility in soil:	No data available
12.5 Results of PBT and vPvB assessment:	No data available
12.6 Other adverse effects	Not applicable

13. DISPOSAL CONSIDERATION

13.1 Waste treatment methods:	Non-hazardous waste. Dispose of according to local legislation
13.2 Disposal Methods	Dispose according to applicable local and government regulations. Dispose of in a local authority landfill. Dispose of empty packaging by wrapping and placing in the



	garbage disposal system. Do not contaminate streams, rivers, or waterways.
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14. TRANSPORT INFORMATION

Not classified as a dangerous good according to the Australian Code for the Transport of Dangerous Goods by road or rail.

14.1 UN number: Not applicable

14.2 UN Proper shipping name: Not applicable

14.3 Transport hazard class: Not applicable

14.4 Packing group: Not applicable

14.5 Environmental hazards: Negligible

14.6 Special precautions for user: Not applicable

14.7 Transport in bulk according to Annex II of Marpol and IBC Code: Not applicable

14.8 Proper shipping name "Bacterial enzyme"

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture:	All components are under the FIFRA exemption rule 25b.
15.2 Chemical Safety assessment	Not applicable

16. OTHER INFORMATION

The information contained in this material safety data sheet is provided in good faith and is believed to be accurate at the date of issue. Ad Terram Treatment Technologies makes no representation of the accuracy or comprehensiveness of the information and to the full extent allowed by law excludes all liability for any loss or damage related to the supply or use of the information in this material safety data sheet. The user is cautioned to make their own determinations as to the suitability of the information provided to the particular circumstances in which the product is used. Please read the product label before using the product

17. PREPARED BY

JAN TAMBOER

