

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Commercial brand: RIZOFOS LIQ TRIGO Pre-inoculado

Type of product: biofertilizer for anticipated treatment of wheat (*Triticum spp.*) seeds, containing phosphorus solubilizing and plant growth-promoting bacteria (*Pseudomonas fluorescens*).

Registry: SENASA EXP – 92179

Manufacturer: Rizobacter Argentina S. A. (www.rizobacter.com.ar)

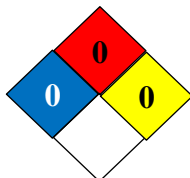
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2. HAZARD IDENTIFICATION

NFPA classification:



Primary route of exposure:

- Eyes: Not applicable.
- Skin: Not applicable.
- Mouth: Not applicable.
- Inhalation: Not applicable.

Signs and symptoms of exposure:

- Eyes contact: Not known hazards.
- Skin contact: Not known hazards.
- Inhalation: Not known hazards.
- Ingestion: Not known hazards.

3. COMPOSITION/INFORMATION ABOUT THE COMPONENTS

Liquid medium

Phosphorus solubilizing bacteria, *Pseudomonas fluorescens* bv. I (biotype A) code RASA 1008:

≥1x10⁹ bacteria/mL at manufacture date.

≥1x10⁸ bacteria/mL at expiration date.

4. FIRST AID

Skin: In case of excessive skin contact, it is advisable to take off the clothing or the equipment used and wash the parts exposed to the product with abundant water and soap.

Eyes: Wash with abundant clean water for 15 minutes while holding eyelids open during the wash. Call a doctor if irritation develops.

Ingestion: Get medical assistance. It is recommended to induce vomiting if a great volume has been swallowed (>500 mL).

Inhalation: If swallowed and the exposure has been excessive, take the patient to the outside. Call a doctor if irritation develops.

5. FIRE FIGHTING MEASURES

Flash point: >100°C

Product flammability: When stored under normal conditions, there is not risk of fire or explosion.

Fire fighting means: Water, class A extinguisher.

Protective clothing: Special clothing is not required other than the normal one worn for the fire fighting procedures.

6. ACCIDENTAL RELEASE MEASURES

Evacuate the spillage area except for the cleaning personnel. Control the spillage with absorbent material such as sawdust or shaving. Once absorbed, sweep and put it inside plastic bags and then proceed with its disposal (see point 13).

7. HANDLING AND STORAGE

- Transport and store at air temperature from 10 to 25°C and at air relative humidity between 40 and 80%. Does not exceed 26°C, otherwise it would occur a decreasing of bacterial viability.
- Keep in all cases the integrity of the original package.
- Do not expose to sunlight, rain or other meteorological agent that could alter the original characteristics of the product.
- Do not transport and/or store together with products that could emanate toxic fumes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection: Not applicable.

Hands protection: The use of rubber gloves is recommended.

Eye protection: Not applicable.

Skin protection: Wear regular working clothes.

Observations: Follow the regular hygienic practices after using this product. After handling the product, wash arms, hands and face with water and soap before eating, drinking or smoking.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Concentrated aqueous solution.
Physical state:	Liquid.
Color:	Brown.
Odor:	Normal.
Density:	1 g/mL.
Viscosity:	0.2 dPa/s.
pH:	6.2-7.8.
Solubility in water:	High.
Boiling point:	Not applicable.
Decomposition temperature:	Not applicable.

10. STABILITY AND REACTIVITY

Stability: Stable at temperatures between 4 and 25°C and without direct incident solar radiation. The product does not have any type of action towards the packaging material while the appropriate handling conditions were kept.

Reactivity: Non-reactive.

11. TOXICOLOGICAL INFORMATION

Inhalation: Not hazardous.

Eyes: A prolonged contact must be avoided although it is not hazardous.

Skin: Not hazardous.

Ingestion: Not dangerous. However, avoid the ingestion because it is an agricultural product for non-food purposes.

Toxicity:

- Oral LD₅₀: For the mouse *Mus musculus*, a maximum of 2×10^8 bacteria inoculated orally did not produce pathogenic effect.
- Ocular LD₅₀: For the mouse *Mus musculus*, a maximum of 4×10^7 bacteria inoculated via ocular did not produce pathogenic effect.
- Nasal LD₅₀: For the mouse *Mus musculus*, a maximum of 4×10^7 bacteria inoculated nasally did not produce pathogenic effect.

Source: "EXPERIMENTAL DEVELOPMENT OF POSSIBLE PATHOGENIC EFFECT OF *Pseudomonas fluorescens* IN MURIDAE ANIMAL MODEL" (2005), Professor Delia Susana Oriani (Veterinary Medic, Clinical and Industrial Bacteriologist, Master of Agricultural Sciences), Faculty of Veterinary Sciences, National University of La Pampa, Argentina.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Specific information is not provided, but given the innocuous nature of the product, it is considered not ecotoxic.

Mobility: *Pseudomonas* bacteria are of low mobility in soils, therefore they do not move far from your incorporation site.

Persistence and degradability: Non persistence product and highly biodegradable.

Observations: Under its use recommendation, RIZOFOS LIQ TRIGO Pre-inoculado does not cause dangerous environmental effects. Although the natural environment of this strain of *Pseudomonas fluorescens* is the soil (rhizosphere of wheat plants), its incorporation as biofertilizer does not cause biodiversity changes because the number of cells introduced is negligible compared to the total number of microorganisms present in the soil. If the maximum RIZOFOS LIQ TRIGO Pre-inoculado bacterial concentration (5×10^9 bacteria / mL) at a rate of 100 mL/ha and a weight of the surface layer (0-20 cm) of 2000 tons of soil is considered, then it would be introducing 250 of *Pseudomonas*/g soil. Assuming an agricultural soil, microorganisms can reach 10^7 unit /g, only 2.5 bacteria every 10^5 microorganisms would be introducing the inoculant, suggesting a very low probability of change at the level of microbiological populations.

13. CONSIDERATIONS RELATED TO ELIMINATION

Due to the innocuous characteristics of this agricultural biological product, the elimination assimilates to the domiciliary residue treatment.

14. TRANSPORTATION

Land (RID/ADR): It does not classify as hazardous product.

Sea (MDG-Code): It does not classify as hazardous product.

Air (ICAO/IATA): It does not classify as hazardous product.

15. REGULATORY INFORMATION

Chemical safety evaluation: Not applicable.

Health, Security and Environment: Not applicable.

16. OTHER INFORMATION

Observations: Rizobacter Argentina S.A. assumes no responsibility, implicit or explicit, for damages of any nature, derived from a different use of the one indicated on the label of the product and for not having observed the recommended precautions or for not preserving the product under normal storage conditions.