



Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product Name: Healthy Farms® AgraSlat®

Other Identifier: Item # 30150

Description: A proprietary blend of naturally occurring, non-pathogenic, non-genetically altered microorganisms on a natural carrier surrounded by a biodegradable biopolymer resin shell

Recommended Use: Manure liquefaction

Form: Powder and Biopolymer Resin

Supplier Identification: Bioverse, Inc.
2220 Research Lane,
Worthington, MN 56187
866-272-3775

Website: myhealthyfarms.com

Email: support@bioverse.com

Emergency Number: Chemtrec 1-800-424-9300 (Emergency 24 hours); Outside US 1-703-527-3887
Chemtrec Administrative Office Telephone Number 1-800-262-8200

Section 2 – Hazards Identification

INNER CONTENTS

Hazard Class: Category 1: Respiratory Sensitizer

Signal Word: Warning

Hazard Statement:

May cause mild eye irritation. May cause skin irritation, inhalation of enzyme containing dust may cause allergic reactions in susceptible individuals on repeated exposure.

Precautionary Statement:

Do not breathe dust. Do not get on skin or clothing. Avoid contact with skin, eyes and clothing. Use with adequate ventilation. Keep container closed and sealed until ready for use. Wash thoroughly after handling. Do not ingest.

Hazard Symbol: Exclamation point



OUTER SHELL MATERIAL

OSHA HAZARDS

No known OSHA hazards.

Not considered hazardous according to EC Directives 67/548/EEC or 1999/45/EC and their valid adaptations and derived national regulations.

HMIS Classification (estimated)

Health hazard: 0
Flammability: 1
Physical hazards: 0

NFPA Rating (estimated)

Health hazard: 0
Fire: 1
Reactivity: 0

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation. Under normal processing conditions at elevated temperatures, contact with molten material can cause thermal burns.

Ingestion: May be harmful if swallowed.

Inhalation: Dust from processing may cause irritation of the respiratory system.

Chronic: No information found.

Section 3 - Composition/Information on Ingredients

INNER CONTENTS

CAS#	Chemical Name	EINECS/ELINCS	IUB	% by weight
9000-90-2	Alpha amylase	232-565-6	3.2.1.1	< 0.5%
9012-54-8	Cellulase	232-734-4	3.2.1.4	< 0.5%
9001-82-1	Lipase	232.619..9	3.1.1.3	< 0.5%
9014-01-1	Protease (subtilisin)	232-752-2	3.4.21.62	< 0.5%

Other components: remaining components of this product are proprietary, nonhazardous and/or are present at concentrations below reportable limits.

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Product consists of a proprietary blend of polyhydroxyalkanoate (PHA) base polymer, additives, and mineral fillers.



Section 4 – First Aid Measures

INNER CONTENTS

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids; get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of water.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

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Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Wash off with soap and water.

Ingestion: Get medical aid immediately. Do not induce vomiting without medical advice. Call a physician.

Inhalation: Heating resin above the recommended processing range, or above 200°C (392°F) will produce toxic fumes. Remove the victim from the exposure area to fresh air immediately. Give oxygen if breathing is difficult. Get medical aid. Give artificial respiration if not breathing.

Notes to Physician: Treat symptomatically and supportively.

Section 5 – Fire Fighting Measures

INNER CONTENTS

Fire Fighting Extinguishing media: Water, foam, chemical and carbon dioxide

Fire Fighting Chemical Hazards: May cause allergic respiratory reaction

Fire Fighting Protective Actions: Not available

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Flash Point: Not determined.

Auto-Ignition Temperature: Not determined.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Special Protective Equipment for Fire-fighters: Wear a self-contained breathing apparatus in pressure-demand mode, MSHA/NIOSH (approved or equivalent), and full protective gear.

Hazardous Combustion Products: crotonic acid, carbon dioxide, carbon monoxide

Combustible Dust: Air-suspended fines, or dust, generated from product can present a dust explosion hazard from an ignition source, or from electrostatic discharge originating in the dust itself.



Section 6 - Accidental Release Measures

INNER CONTENTS

Personal precautions, protective equipment and emergency procedures: Contact unnecessary and unprotected personnel from entering area. Provide sufficient ventilation and remove contaminated clothing. Do not walk through spilled material. Avoid breathing dust.

Environmental precautions: Removal by mechanical means (ie vacuuming with HEPA filters) is preferred. Solid can be placed in sealed containers for disposal. Dilute remainder with plenty of water avoiding the formation of aerosols and flush to an approved drain according to local guidelines.

Methods and material for containment and cleaning up: Remove spilled material immediately to reduce the formation of dust using mechanical means (ie vacuuming with HEPA filters) is preferred. Solid can be placed in sealed containers for disposal. Dilute remainder with plenty of water avoiding the formation of aerosols and flush to an approved drain according to local guidelines.

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General Information: Use personal protective equipment as indicated in Section 8. Ventilate area.

Spills/Leaks: Sweep up pellets. Vacuum fines, or dusts, using a combustible dust vacuum.

Section 7 - Handling and Storage

INNER CONTENTS

Precautions for safe handling: Segregate from acids, peroxides, and combustible organic materials or easily oxidizable materials. Keep from freezing. Protect against physical damage. Keep away from heat and flame.

Conditions for safe storage including any incompatibilities: Keep away from heat and flame. Store in a cool dry area in closed original containers.

Hygiene: not specified

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Handling: Good industrial practices in housekeeping and personal hygiene should be followed. Minimize dust. Maintain operating temperature within the recommended processing range. Avoid contact with molten material and provide adequate ventilation during processing. When mechanical energy is used to process, or transfer, the materials, fines or dust can be generated. Systems and procedures should be designed to minimize the generation and accumulation of dust from the handling and processing of PHA resin. Refer to NFPA pamphlet 654: Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids.

Storage: resins have good storage stability, but extremes of temperature and humidity should be avoided. The maximum recommended shelf life is two years. Resin should be stored in original shipping package. Keep the resin dry and sealed to exclude moisture. Store below 27°C (80°F).



Section 8 - Exposure Controls/Personal Protection

INNER CONTENTS

Occupational exposure limits: None established

Biological limit values: None established

Appropriate engineering controls:

Eye/face protective equipment:

Skin protection:

Respiratory protection:

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Engineering Controls: Provide good general ventilation with additional local ventilation where the hot polymer may reside for long periods (leak areas, above the nozzle or die, in screen changers, in vent ports, etc.). Heating resin above recommended processing conditions or 200°C (392°F) will produce toxic fumes.

OSHA Vacated PELs: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Hot polymer can cause thermal burns. Wear impervious clothing and insulated gloves where exposure to molten polymer is possible.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if there is potential for exposure to dust or toxic fumes, or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

INNER CONTENTS

Physical State:	Solid
Appearance:	Tan free flowing powder
Odor:	Fermentation odor
Odor threshold:	Not established
pH:	Not established.
Freezing/Melting Point:	Not established.
Initial boiling point and boiling range:	Not available.
Flash Point:	Not available.
Evaporation Rate:	Not available.
Flammability:	Not available
Upper/lower flammability or exposure limits:	Not available
Vapor Pressure:	Not available.
Vapor Density:	Not available
Relative Density:	Not established
Solubility:	Dispersible in water
Partial coefficient: n-octanol/water:	Not available
Auto-ignition temperature:	Not available



Decomposition temperature: Not available
Viscosity: Not available
Explosive properties: Not available
Oxidizing properties: Not available

Other Information: No additional information.

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Physical State: Solid

Appearance: Off-white pellets

Odor: Mild

pH: Not applicable

Vapor Pressure: Not determined

Vapor Density: Not determined

Evaporation Rate: Not available

Viscosity: Not available

Boiling Point: Not applicable

Melting Point: 100°C-190°C (212°F-374°F)

Decomposition Temperature: Above 200°C (392°F)

Specific Gravity/Density: 1.4 g/cm³

Molecular Weight: Approximately > 100,000 (by GPC)

Solubility: Soluble in chloroform, methylene chloride, N-Methylpyrrolidone

Section 10 - Stability and Reactivity

INNER CONTENTS

Chemical Stability: Stable.
Hazardous Reactions: None identified
Conditions to Avoid: None known
Incompatible materials: None known
Hazardous decomposition products: None

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Chemical Stability: Stable under recommended storage conditions. See section 7.

Conditions to Avoid: Incompatible materials, excess heat, flames ignition sources.

Incompatibilities with Other Materials: Strong oxidizing agents, strong acids.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, crotonic acid

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

INNER CONTENTS

Acute toxicity: Ingestion of this material is not known to result in adverse effects. No specific data available

Skin Corrosion/irritation: this material may be a mild skin irritant.

Serious eye damage/irritation: overexposure to the eye is characterized by irritation

Respiratory or skin sensitization: overexposure by inhalation may cause sensitization and allergic response in hypersensitive individuals; not a skin sensitizer



Germ cell mutagenicity: Not available.
Carcinogenicity: Not listed by IARC, OSHA, or NTP
Reproductive toxicity: No data available
Aspiration hazard: see respiratory sensitization

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Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.

Section 12 - Ecological Information

INNER CONTENTS

Ecotoxicity: No specific data available
Persistence and degradability: No specific data; components are considered to be biodegradable.
Bioaccumulation potential: No specific data available; components considered to be biodegradable will not bioaccumulate.
Mobility in soil: No data available
Results of PBT and vPvB assessment: No specific data available; the substance does not meet the criteria for characterization as either PBT or vPvB
Other adverse effects: None known

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Mirel base resin has the following certifications for biodegradability:

BPI-certified to meet U.S. standard for compostable plastics that will compost satisfactorily in municipal and industrial aerobic composting facilities according to ASTM D6400

Vinçotte-certified as “OK Biodegradable Water” for nature freshwater environments.

Vinçotte-certified as “OK Biodegradable Soil” for nature soil environments.

Vinçotte-certified as “OK Compost” for biodegradability in industrial composting units to meet E.U. standard for compostable plastics according to EN 13432 / EN 14995.

Vinçotte-certified as “OK Compost Home” for biodegradability in home composting systems.

P1003 is Vinçotte-certified as “OK biobased” for biobased carbon content of more than 80%, Class 4.

Meets the U.S. standard for non-floating biodegradable plastics in marine environments according to ASTM D7081.

Section 13 - Disposal Considerations

INNER CONTENTS



Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

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There are no special requirements. Observe all federal, state, and local environmental regulations. Non-hazardous, biobased, and biodegradable biopolymer resin is not designed to biodegrade in conventional landfills and is not part of the conventional plastics recycling stream.

Section 14 - Transport Information

INNER CONTENTS

UN Number: None assigned; the substance is not classified as hazardous for transport.

UN Proper Shipping Name: Not applicable.

Transport Hazard classes: Not applicable.

Packing Group: Not applicable.

Transport Environmental Hazards: The substance is not classified as hazardous for transport.

Transport Special Precautions for User: The substance is not classified as hazardous for transport.

Transport in Bulk (MARPOL): The substance is not classified as hazardous for transport.

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Not regulated.

Section 15 - Regulatory Information

INNER CONTENTS

HMIS Hazards Ratings: Health 1
 Flammability 0
 Reactivity 0
 Personal Protection: E

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US FEDERAL

TSCA

Mirel polymers are listed on the TSCA inventory.

EUROPEAN UNION



Not considered hazardous according to EC Directives 67/548/EEC or 1999/45/EC and their valid adaptations and derived national regulations.

Section 16 - Additional Information

INNER CONTENTS

SDS Creation Date: 03/25/2015

SDS Review Date: 03/25/2015

The information contained in this Safety Data Sheet, as of the issue date, is believed to be true and correct. Accuracy or completeness of this information and any recommendations or suggestions are made without warranty or guarantee. Since the conditions of use are beyond the control of the company, it is the responsibility of the user to determine the conditions of safe use of this product. This information does not represent analytical specifications.

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MSDS Creation Date: 03/23/2012

No additional information.