



SAFETY DATA SHEET

BIO-ORGANIC CATALYST, INC.

Safety Data Sheet according to Reg. (EU) No 453/2010

Product Name: EcoSystem Plus®

Revision Date: October 16, 2015

SECTION 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY

1.1 Product Identifier

Product Name: EcoSystem Plus®

Chemical Name of the Substance: Water, highly purified proteins from plant and mineral sources.

1.2 Relevant Identified Uses of the Substance or Mixture

Municipal / Industrial Odor-Wastewater Treatment

1.3 Details of the Supplier of the Safety Data Sheet

Bio-Organic Catalyst, Inc., A wholly owned subsidiary of Neozyme International, Inc.
711 W. 17th Street, Suite E-6
Costa Mesa, CA 92627 USA

Customer Information Number:

Telephone: 011 949-515-1301
Fax: 011 949-515-1314
Info@bio-organic.com

1.4 EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 011 917-513-8012

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Classification according to Regulation (EC) No 1272/2008:

H316 Skin irritation

H320 Eye Irritation

Classification according to EU Directives 67/548/EEC or 1999/45/EC:

R36 Irritating to eyes

R38 Irritating to skin.

For the full text of the H or R-phrases mentioned in this Section, see Section 16.

2.2 Label Elements

In compliance with Regulation (EC) No. 1272/2008.

Hazard pictograms: None

Signal word: Warning

Hazard statements (CLP)

H316 Causes mild skin irritation
 H320 Causes eye irritation

Precautionary statements:

P264 Wash skin thoroughly after handling.
 P280 Wear protective gloves / protective clothing / eye protection / face protection.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P332 + P313 If skin irritation occurs: Get medical advice / attention.

2.3 Other Hazards

None

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable

3.2 Mixture

Name	Product Identifier	%	Classification According to Directive 67/548/EEC	CLP Classification Regulation (EC) No. 1272/2008
Aqueous solution of fermentation supernatant (Yeast)	68876-77-7	91.0	Not classified	Not classified
Alcohols, C11-15-secondary, ethoxylated	68131-40-8	9.0	R36 and R38	H315 H319

If present in this product, any not classified components disclosed above for which no country specific OEL value(s) is (are) indicated under Section 8, are being disclosed as voluntarily disclosed components.

For the full text of the H Statements and R Phrases mentioned in this Section, see Section 16.

If present in this product, any not classified components disclosed above for which no country specific OEL value(s) is (are) indicated under Section 8, are being disclosed as voluntarily disclosed components.

SECTION 4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General advice: First aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists, refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

4.2 Most Important Symptoms and Effects, both Acute and Delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed. Notes to Physician: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing Media

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: None

5.2 Special Hazards Arising from the Substance or Mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual fire and explosion hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

5.3 Advice for Firefighters

Firefighting procedures: Keep people away. Isolate fire and deny unnecessary entry. Burning liquids may be extinguished by dilution with water. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental Precautions

"IN ACCORDANCE WITH NATIONAL AND LOCAL LAWS AND PRACTICES." Flush down sewage or drainage systems with copious amounts of water. See Section 12, Ecological Information.

6.3 Reference to Other Sections: References to other sections, if applicable, have been provided in the previous sub-sections.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

7.2 Conditions for Safe Storage, including any Incompatibilities

No specific requirements. CONDITIONS TO AVOID: Temperatures above 45°C., pH below 2.5 and above 12.5 will affect the quality and condition of the product. Strong caustics and strong bases may affect the quality and condition of the product. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. The shelf life given is for unopened containers stored under moderate temperature conditions.

Storage stability:

Use within 24 months

7.3 Specific End Use

See the technical data sheet on this product for further information.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Controls

Engineering controls: Use local exhaust ventilation, or other engineering controls, to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures:

Eye/face protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

Skin protection/hand protection: Use chemical resistant gloves classified under Standard EN374. Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Viton.

Examples of acceptable glove barrier materials include: Polyvinyl alcohol ("PVA"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Environmental exposure controls: See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties**Appearance****Physical State**

Liquid

Color

Colorless - pale amber

Odor

Mild

Odor Threshold

No test data available

pH

Full Strength Concentrate 3.25 +/- .25

At recommended use dilutions, pH ranges 6.3 to 6.9

Melting Point/Range

Not applicable

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Freezing Point	See Pour Point
Boiling Point (760 mmHg)	> 100 °C at 760 mmHg Calculated
Flash Point	ASTM D 93 Closed Cup >93°C
Evaporation Rate (Butyl Acetate = 1)	<0.01 Calculated
Flammability (solid, gas)	Not applicable to liquids
Lower Explosion Limit	No test data available
Upper Explosion Limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	>1 Calculated
Relative Density (water = 1)	1.002 @ 20°C / 20°C
Water Solubility	100% in water
Auto-ignition Temperature	No test data available
Decomposition Temperature	No test data available
Kinematic Viscosity	@ 40°C 2.3373 cst
Explosive Properties	No data available
Oxidizing Properties	No data available
9.2 Other information	
Pour Point	2.22°C or (+28°F)

NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: No data available

10.2 Chemical Stability: Thermally stable at typical use temperatures.

10.3 Possibility of Hazardous Reactions: Polymerization will not occur.

10.4 Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose.

10.5 Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

10.6 Hazardous Decomposition Products: Decomposition products depend upon temperature, air supply and the presence of other materials.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological information on this product, or its components, appears in this section when such data is available.

11.1 Information on Toxicological Effects

Acute toxicity: LC50-Level of 10,000 mg/kg; No effects after 168 hours; Non-Toxic.

Acute oral toxicity: Very Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials.
ORAL LD50: Levels of >5,000 mg/kg: No effects.

Acute dermal toxicity: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Typical for this family of materials.
LD50, Rabbit, > 2,000 mg/kg as tested.

Acute inhalation toxicity: No adverse effects are anticipated from single exposure to vapor. For respiratory irritation and narcotic effects: No relevant data found. The LC50 has not been determined.

Skin corrosion/irritation: Skin irritation testing: Final dermal irritation determination, It is a mild skin irritation based on a score of 2.09 compared to standard of draize score > 1.5, but < 2.3.

Serious eye irritation: None

Eye Irritation Testing: Utilization of InVitro International's Irritation Assay System was used to evaluate the product and is classified as a mild ocular irritant, under EU CLP classification, with an IDE score of 15.2, which reflects a classification of Category 2 irritant.

Sensitization:

For skin sensitization: No relevant data found.

For respiratory sensitization: No relevant data found.

Specific target organ systemic toxicity (single exposure): Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific target organ systemic toxicity (repeated exposure)

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity: No relevant data found.

Teratogenicity: No relevant data found.

Reproductive toxicity: No relevant data found.

Mutagenicity: No relevant data found.

Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY: None

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product, or its components, appears in this section when such data is available. This is a totally safe and efficient biocatalytic degrader of organic waste materials. The product causes contaminants and other organic matter to eventually biodegrade, thus returning to carbon dioxide and water. When disposed of in sewage and drainage systems, the product aids in the breakdown of pollutants such as oil.

12.1 Toxicity

Ecotoxicity: The material is non-toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish acute & prolonged toxicity: For this family of materials: LC50, fathead minnow (*Pimephales promelas*), static, 96 hrs. 100% survival rate at 1ppm.

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Aquatic invertebrate acute toxicity: EC50, water flea *Daphnia magna*, 48 hrs. Toxicity: Not Detected.

Toxicity to micro-organisms: EC50 *Vibrio fischeri* (*Photobacterium phosphoreum*), *Pseudokirchneriella subcapitata* (*Selenastrum capricornutum*) Toxicity: Not Detected.

Mutagenicity test: The organisms *P. subcapitata* and *D. magna* are continental water organisms. *V. fischeri* is an organism that can be involved for both continental water and marine water samples. *Salmonella typhimurium* is an organism to evaluate sweet water and its results can be applied to the environment and extrapolated to humans.

Salmonella typhimurium: Mutagenicity: Not Detected

Marine acute toxicity: The marine invertebrate species, *Mysidopsis bahia* (*Americamysis bahia*) and the marine vertebrate species, *Menidia beryllina* were used in the tests. For the marine invertebrate species, 48-Hour Acute *Mysidopsis bahia* survival test results : LC-50 -316.23 (ppm), The 96-Hour LC-50 (concentration at which 50% mortality is expected to occur) *Menidia beryllina* survival data was 203.04 (ppm).

12.2 Persistence and Degradability

OECD biodegradation tests: For this family of materials: OECD Guideline for Testing of Chemicals, 302 B, Inherent Biodegradability: Zahn-Wellens/EMPA-Test Adopted: July 17, 1992, as well as German Standard Procedures for Water, Waste Water and Sludge Testing, Test procedure with water organisms (Group L) Determination of the biodegradability, Static Test (L25), DIN 38 412, Part 25.

Biodegradation exposure time method: > 58% -48 HRS OECD 302B Test Closed Bottle Ready
Biodegradability Test Reference: Environmental Protection Agency - Toxic Substances Control Act, Code of Federal Regulations Title 40, part 796, section 3200 (40 CFR 796.3200)

Biodegradation exposure time method: > 75%-28 Days

Environmental fate: Persistence and Degradability: The material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

12.3 Bioaccumulative Potential

Unknown

12.4 Mobility in Soil

No specific, relevant data available for assessment.

12.5 Results of PBT and vPvB assessment

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

12.6 Other Adverse Effects

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Flush down sewage or drainage systems with copious amounts of water. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing waste.

The definitive assignment of this material to the appropriate EWC group, and thus its proper EWC code, will depend on the use that is made of this material. Contact the authorized waste disposal services.

SECTION 14. TRANSPORT INFORMATION

Classification for ROAD and Rail Transport (ADR/RID):

14.1 UN number	Not applicable
14.2 Proper shipping name	Not applicable
14.3 Class	55
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not considered environmentally hazardous based on available data.
14.6 Special precautions for user	No data available.

Classification for SEA Transport (IMO-IMDG):

14.1 UN number	Not applicable
14.2 Proper shipping name	Not applicable
14.3 Class	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not considered as marine pollutant based on available data.
14.6 Special precautions for user	No data available.
14.7 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk.

Classification for AIR Transport (IATA/ICAO):

14.1 UN number	Not applicable
14.2 Proper shipping name	Not applicable
14.3 Class	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	No data available.

This information is not intended to convey all specific regulatory or operational requirements /information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture**REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either pre-registered, registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No.

1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

Seveso II - Directive 96/82/EC and its amendments:

Listed in Regulation: Directive 96/82/EC does not apply

15.2 Chemical Safety Assessment

Not applicable

SECTION 16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H315 Causes skin irritation.
H316 Causes mild skin irritation
H319 Causes serious eye irritation.
H320 Causes eye Irritation

Full text of R-Phrases referred to under sections 2 and 3

R36 Irritating to eyes.
R38 Irritating to skin.

Product literature

Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

Information source and references

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

Bio-Organic Catalyst, Inc. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M) SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer- specific (M) SDSs, we are not and cannot be responsible for (M) SDSs obtained from any source other than ourselves. If you have obtained an (M) SDS from another source or if you are not sure that the (M) SDS you have is current, please contact us for the most current version.

This SDS will be revised and updated as requirements occur. Should further information and relevant advice be required, contact Bio-Organic Catalyst, Inc. @ Info@bio-organic.com
EcoSystem Plus® is manufactured under U.S. Patent No. 5,879,928.