

SAFETY DATA SHEET

SECTION 1 - SUBSTANCE IDENTITY AND COMPANY INFORMATION

1.1 PRODUCT NAME:	BACILIRID™ BIOLOGICAL FUNGICIDE
1.2 COMPANY INFORMATION:	Koppert Biological Systems, Inc. 1502 Old US 23 Howell, MI 48843
1.3 CONTACT INFORMATION:	Tel: +1 (810) 632-8750 Fax: +1 (810) 632-8771 E-mail: info@koppert.com
1.4 EMERGENCY CONTACT:	Poison Control Center 1-800-222-1222

SECTION 2 - HAZARD IDENTIFICATION

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

2.1 Classification of the product:

No need for classification according to GHS criteria for this product.

2.2 Label elements:

The product does not require a hazard warning label in accordance with GHS criteria.

Labeling of special preparations (GHS)

Warning! Hazardous respirable dust may be formed when used. Do not breathe dust. This product is not combustible in the form in which it is shipped by the manufacturer but may form a combustible dust through downstream activities (e.g. grinding, pulverizing) that reduce its particle size.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Bacillus amyloliquefaciens

CAS Number:	68038-60-8
Content (W/W):	11.0%
Synonym:	No data available

Kaolin

CAS Number:	1332-58-7
Content (W/W):	<100.0 %
Synonym:	No data available

Titanium dioxide

CAS Number:	1317-70-0
Content (W/W):	0.3 – 3.0 %
Synonym:	No data available

SECTION 4 - FIRST AID MEASURES

4.1 General advice:

Remove contaminated clothing.

4.2 If inhaled:

Keep patient calm, remove to fresh air.

4.3 If on skin:

Wash thoroughly with soap and water.

4.4 If swallowed:

Rinse mouth and then drink 200-300 ml of water.

4.5 If in eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids open.

4.6 Most important symptoms and effects, both acute and delayed:

Symptoms: (Further) symptoms and / or effects are not known so far

4.7 Indication of any immediate medical attention and special treatment needed:

Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing Media

Suitable extinguishing media:

water spray, dry powder, foam

Unsuitable extinguishing media for safety reasons:

Carbon dioxide

5.2 Special hazards arising from the substance or mixture:

Hazards during firefighting:

carbon monoxide, carbon dioxide, nitrogen oxides, silica compounds, metal oxides.

The substances/groups of substances mentioned can be released in case of fire.

5.3 Advice for fire-fighters:

Protective equipment for firefighting:

Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. In case of fire and/or explosion do not breathe fumes. Keep containers cool by spraying with water if exposed to fire.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Further accidental release measures:

Avoid dispersal of dust in the air (i.e., clearing of dust surfaces with compressed air). Avoid the formation and build-up of dust – danger of dust explosion. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

6.1 Personal precautions, protective equipment, and emergency procedures:

Avoid dust formation. Use personal protective clothing. Avoid contact with the skin, eyes, and clothing.

6.2 Environmental precautions:

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater.

6.3 Methods and material for containment and cleaning up:

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and [placed in suitable container for disposal. After decontamination, spill area can be washed with water. Collect wastewater for approval disposal.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling:

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition – No smoking. Keep container tightly sealed. Protect against heat. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/product may be handled only by trained personnel. Avoid all direct contact with the

substance/product. Avoid contact with the skin, eyes, and clothing. Avoid inhalation of dusts/mists/vapors. Wear suitable personal protective clothing and equipment.

7.2 Protection against fire and explosion

No special precautions necessary. The substance/product is non-combustible. The product is not explosive.

7.3 Conditions for safe storage, including any incompatibilities:

Segregate from foods and animal feeds.

7.4 Further information on storage conditions:

Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat, or flame. Protect containers from physical damage. Protect against contamination.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

Components with occupational exposure limits

Titanium dioxide	OSHA Z1:	PEL 15mg/m3 Total dust;
	ACGIH, US:	TWA value 10mg/m3 Inhalable particles;
	ACGIH, US:	TWA value 3mg/m3 Respirable particles;
	OSHA Z1:	PEL 15mg/m3 Total dust;
	OSHA Z1:	TWA value 5mg/m3 Respirable fraction;
	OSHA Z3:	TWA value 15 millions of particles per cubic foot or air Respirable fraction;
Kaolin	OSHA Z3:	TWA value 15mg/m3 Total dust;
	ACGIH, US:	TWA value 2mg/m3 Respirable fraction; The value is for particulate matter containing no asbestos and <1% crystalline silica.
	OSHA Z1:	PEL 5mg/m3 Respirable fraction;
	OSHA Z1:	PEL 15mg/m3 Total dust;

Advice on system design:

Whenever possible, engineering controls should be used to minimize the need for personal protective equipment. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.

Koppert

Personal Protective Equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

Respiratory protection:

Wear A NIOSH approved (or equivalent) particulate respirator if ventilation is inadequate to control dust.

Eye protection:

Safety glasses with side shields. Wear face shield or tightly fitting safety goggles (chemical goggles) if splashing hazard exists.

Hand protection:

Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g., protective clothing, head protection, apron, protective boots, chemical protection suit.

General safety and hygiene measures:

Wear long sleeved work shirt and long pants in addition to other stated personal protective equipment, Workplace should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is recommended. Store work clothing separately. Keep away from food, drink, and animal feeding stuffs.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form:	Solid
Odor:	Musty
Odor threshold:	Not determined due to potential health hazard by inhalation.
Color:	White to light beige
pH value:	approx. 4-8 (20 °C)
Melting point:	The product has not been tested.
Boiling point:	The product has not been tested.
Flash point:	N/A
Flammability:	Based on the structure or composition there is no indication of flammability
Lower explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Upper explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Vapor pressure:	N/A
Bulk Density:	200 – 1,200 kg/m ³
Partitioning coefficient n-octanol/water (log Pow):	N/A
Self-ignition temperature:	Based on its structural properties the product is not classified as self-igniting.
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated.
Viscosity, dynamic:	N/A, the product is solid.
Solubility in water:	dispersible
Evaporation rate:	N/A

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity:

No hazardous reactions if stored and handled as prescribed / indicated.

10.2 Oxidizing properties:

Based on its structural properties the products are not classified as oxidizing

10.3 Chemical Stability:

The product is stable if stored and handled as prescribed/indicated.

10.4 Possibility of hazardous reactions:

No hazardous reactions if stored and handled as prescribed / indicated.

10.5 Conditions to avoid:

Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme temperatures. Avoid prolonged exposure to extreme heat. Avoid contamination. Avoid electro-static discharge. Avoid prolonged storage. This product may form an explosive mixture if:

1. The dust is suspended in the atmosphere as a dust cloud AND
2. The concentration of the dust is above the lower explosion limit (LEL) AND
3. The limiting oxygen concentration (LOC) is exceeded.

10.6 Incompatible materials

Strong acids, strong bases, strong oxidizing agents.

10.7 Hazardous decomposition products

Decomposition products:

Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

SECTION 11 - TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Primary Routes of Exposure:

Routes of entry for solids and liquids are ingestion and inhalation but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Assessment of acute toxicity:

Virtually nontoxic after a single ingestion. Virtually nontoxic inhalation. Virtually nontoxic after a single skin contact.

Oral:	Type of value: ATE Value: >5,000 mg/kg	Type of Value: LD50 Species: Rat Value: >5,000 mg/kg (OECD Guideline 425)
Inhalation:	Type of Value: ATE Value: >5.000 mg/l Determined for dust	Type of Value: LC50 Species: Rat Value: >5.23 mg/l (OECD Guideline 403)
Dermal:	Type of value: ATE Value: >5,000 mg/kg	Type of value: LD50 Species: Rat Value: >5,050 mg/kg (OECD Guideline 402)

Assessment other acute effects:

Assessment of STOT single:

Based on the available information there is no specific target organ toxicity to be expected after a single exposure

The product has not been tested. The statement has been derived from the properties of the individual components.

Irritation / corrosion:

Assessment of irritating effects; Not irritation to the skin. Not irritating to the eyes.

Skin

Species: Rabbit
Result: Non-irritant
Method: OECD Guideline 404

Eye

Species: Rabbit
Result: Non-irritant
Method: OECD Guideline 405

Sensitization:

Assessment of sensitization: There is no evidence of a skin-sensitizing potential.

Buehler Test

Species: Guinea pig

Results: Non-sensitizing

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Koalin

Assessment of repeated dose toxicity: Repeated inhalative uptake of particles/dust reaching the alveoli may cause damage to lungs.

Gene toxicity

Assessment of mutagenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential .

Carcinogenicity

Assessment of carcinogenicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Kaolin

Assessment of carcinogenicity: Based on available data, the classification criteria are not met. The American Conference of Governmental Industrial Hygienists (ACGIH) has classified this substance as Group 4A – Not classifiable as human carcinogen.

Reproductive toxicity

Assessment of reproduction toxicity: The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity

Assessment of teratogenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Other Information

Misuse can be harmful to health.

SECTION 12 - ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Toxicity to fish

LC50 (96 H) >100 mg/l, *Oncorhynchus mykiss*

Aquatic invertebrates

LC50 (48 h) > 100mg/l, *Daphnia magna*

Aquatic plants

EC50 (72 H) >100mg/l (growth rate), *Pseudokirchneriella subcapitata*

Persistence and degradability

Assessment biodegradation and elimination (H2O)

Not applicable

Bio accumulative potential

Assessment bioaccumulation potential

Not applicable

Mobility in soil

Assessment transport between environmental compartments

Not applicable

Additional information

Other ecotoxicological advice:

Do not discharge product into the environment without control.

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste Disposal of material:

Pesticide wastes are regulated. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

13.2 Container Disposal:

Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

SECTION 14 - TRANSPORT INFORMATION

Land transport US DOT

Not classified as a dangerous good under transport regulations.

Sea transport IMDG

Not classified as a dangerous good under transport regulations.

Air transport IATA /ICAO

Not classified as a dangerous good under transport regulations.

SECTION 15 - REGULATORY INFORMATION

Federal Regulations

Registration Status:

Crop Protection TSCA, US released / exempt

EPCRA 311/312 (hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

State regulations

<u>State RTK</u>	<u>CAS Number</u>	<u>Chemical Name</u>
PA	1317-70-0	Titanium dioxide
	1332-58-7	Kaolin
NJ	1332-58-7	Kaolin

Safe Drinking Water & Toxic Enforcement Act, CA Prop. 65:

Based on an evaluation of the product's composition and the uses(s), this product does not require a California Proposition 65 Warning.

Labeling requirements under FIFRA

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label.

CAUTION:

KEEP OUT OF THE REACH OF CHILDREN

KEEP OUT OF REACH OF DOMESTIC ANIMALS

May cause moderate but temporary irritation to the eyes.

Avoid contact with the skin, eyes, and clothing.

Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

SECTION 16 - OTHER INFORMATION

THE INFORMATION PRESENTED IN THIS DOCUMENT IS BELIEVED TO BE CORRECT BASED UPON DATA AVAILABLE. WHILE THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, IT IS PROVIDED FOR YOUR GUIDANCE ONLY.