



Epicore BioNetworks Inc.

EPITHERM™

MICROBIAL ECOSYSTEM FOR COMPOSTING ORGANIC WASTE

DESCRIPTION

EPITHERM is a dried, buff-colored powder, dispersible in liquids, which contains a balanced blend of potent enzymes in combination with a unique microbial ecosystem isolated from forest soil. EPITHERM contains a group of thermophilic microorganisms which are capable of liquefying and digesting all forms of organic waste, such as animal and poultry droppings, domestic garbage, dead vegetation and similar types of refuse from homes, food processing plants, feed lots, stockyards, canneries and fisheries.

EPITHERM, due to its concentration of natural thermophilic microorganisms, is capable of reducing the organic matter in garbage disposal dumps, under aerobic conditions, to non-septic, deodorized humus on an economic basis in days instead of weeks or months.

The importance of humus in the soil is well recognized and serves many important functions. It serves as a source of nutrients for plant growth and for the growth of essential microorganisms. It improves the water holding capability and increases the availability of minerals. Humus is not chemically static or non-variable but is rather in a dynamic condition since it is constantly being formed from animal and plant residues. It is continuously being decomposed by the metabolic activity of the essential soil microorganisms. Due to our present agricultural practices, the concentration of humus in the soil has been dropping. At one time highly productive soils contained 5-7% organic content, while today the mean national average is 1½ - 0.75%. With the abundance of solid waste being generated every day, its conversion into humus through the process of composting is not only desirable but a necessity.

ACTIONS AND USES

In the treatment of domestic and industrial waste, cellulose and lignin are two of the most critical components to decompose. To convert the tough fibrous structure of cellulose and the complex aromatic structure of lignin into a soluble or fluid state requires a group of enzymes known as cellulases and ligninases. Inasmuch as these essential enzymes are only produced by specialized microorganisms, it is necessary to inoculate these wastes with highly active cellulase and ligninase secreting microbial strains to obtain sufficient activity to decompose the cellulose and lignin present in a short residence time.

Due to the large volume of citrus fruits used our daily diet, potent pectinase secreting microorganisms are required to convert the insoluble vegetable protopectins into soluble compounds. EPITHERM is outstanding in its concentration of aerobic and facultative anaerobic microorganisms capable of producing potent, broad-spectrum pectinases for cellulose, lignin and protopectin digestion. Portions of the microorganisms used in EPITHERM are thermophilic, which allow higher temperatures to develop more rapid decomposition of the waste being treated.

SPECIAL PRECAUTIONS

A nutritionally related requirement, not known to the non-microbiologist, is that carbon and nitrogen must be present in certain ratios. The carbon to nitrogen ratio (C:N) may be the rate-limiting step in the composting process. Different raw materials for composting inherently have different C:N ratios. The optimum C:N ratio is 10:1. A practical maximum is 25:1. Higher ratio raw materials will take longer to compost. Lower ratio materials will liberate ammonia and thus lose fertilizer value. Wastes such as vegetable plants, paper and leaves have a C:N ratio at or above 25:1. With these materials, it may be necessary to add nitrogen in the form of ammonium phosphate, ammonium sulfate or urea to lower the C:N ratio for optimum efficiency. Another approach is co-composting with residential food, farm animal or municipal wastes.

HOW IT IS USED

One pound of EPITHERM is added to twenty-five gallons of water, with mixing, and dispersed with a coarse sprayer over approximately ten tons of material to be digested. The overall usage rate is 45 grams EPITHERM per metric ton of compostable material. For most efficient digestion in the shortest residence time, the waste to be treated should be pre-ground before being sprayed. Conditions vary and the operator should experiment with the smallest dosage that will give the desired result.

HOW SUPPLIED

EPITHERM is supplied in 40 kilogram (88 pound), net weight polyethylene lined fiber drums.

PRODUCT STORAGE

Biological products are unlike inert chemical products. They require special treatment during storage and handling. Therefore, for EPITHERM,

- * Do not store continuously at temperatures above 40°C (104°F).
- * Store out of direct sunlight in a well-ventilated area.
- * Keep products dry until ready to hydrate.
- * Do not mix with any materials not recommended by Epicore, especially biocides and harsh chemicals.

SAFETY

All Epicore biological products are non-toxic. However, the user is advised to consult the Material Safety Data Sheet for further information and guidance.

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