

## BIO CLEANING SOLUTIONS

Microzyme™ DC20

### Microzyme D60 Spore Powder INTRODUCTION



Hydrocarbon, Sewage and Organic effluent streams contain a complex mixture of by-products which usually have to be degraded to simple compounds before they can safely be disposed of into the environment.

#### D60 – MODE OF ACTION

Microzyme D60 powder is an active ingredient for the manufacture of organic waste treatment products.

Once formulated the bio-enzymes

present in D60 will immediately start to break down organic matter. The reaction products together with nutrient salts in D60 create a perfect medium for the growth of the bacteria present. These organisms will secrete additional enzymes capable of attacking proteins, carbohydrates, cellulosic matter and fats. This hydrolysis and the continued application of D60 will maintain a liquefied waste and reduce offensive odours.

#### PRODUCT TYPE/ACTIVITY

D60 is a standardized blend of non-harmful non-GMO bacteria and nutrient salts to the following specification:-

- *Bacillus subtilis strain D014*

It is further confirmed that:

- All bacterial strains are natural indigenous isolates
- All bacterial strains are identified using 16s RNA sequence homology
- All bacteria strains are anthrax negative
- All bacterial strains are *B. cereus* enterotoxin negative
- All bacterial strains are non- genetically modified
- The products are non-hazardous and completely biodegradable.

Form : Powder

Primary enzymes as excreted by the bacillus bacterium :  
:  $\alpha$ -amylase  
:  $\beta$ -glutamate  
: Proteinase

Enzyme derivative:

organism: Bacillus subtitles  
Bacteria:  $>1 \times 10^9$  organisms/g  
Nutrient salts:

## SPECIAL SPECIFICATION

Heavy metals	: Less than 50 ppm
Aflatoxins	: Absent
Antibiotic activity	: Absent
E. coli	: Absent in 0.1 g

D60 is manufactured to the recommendations of the WHO Food Additives Series No. 2 1972.

- No safety concerns as all strains are EEC Class 1\* \*2000/54/EC is a directive of the European parliament and of the council which classifies micro-organisms, as biological agents, into four classes depending on their risk to human health • Product contains Bacillus bacteria in 100% spore form for: - Extended product life - Product stability - Maintenance of original product specification • Product can be blended with a wide range of inorganic or organic carriers to manufacture custom products

## APPEARANCE D60

Buff colored, free flowing powder with a typical "bacterial" odour. 90% soluble in water.

## OPTIMUM pH/TEMPERATURE

pH optimum : 5.0 – 7.5  
Temperature tolerance : Up to 40°C

Effluent pH outside this range is usually either very acidic or alkaline and in practice requires pre-treatment before disposal. The enzymes released by the bacteria present in D60 will tolerate temperatures of up to 70°C. However, the micro-organisms will not withstand temperatures in excess of 45°C. Thus for synergistic performance and coexistence of the blend, the lower temperature should apply.

## INACTIVATION OF D60

High concentrations of heavy metals will inhibit the activity of the system. The presence of chlorine, bleaches etc. can also have a detrimental effect and neutralization of these inhibitors is necessary before application of D60.

## PACKAGING

D60 is readily available in powder form packed in 25 kg Bags.

## APPLICATION

Due to the similarity in composition of organic wastes and the universal action of DC20 many different applications of the product are possible. I.e. D60 can be used for domestic, industrial or agricultural / effluent problems.

The addition rate of D60 will vary depending on the severity of the problem and some flexibility in dose rate may be necessary due to local conditions. Various uses for the products are given in the table overleaf along with suggested dose rates.

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