

## BIO CLEANING SOLUTIONS

### *Microzyme™ Surf Clean Powder*

#### **Product Description:**

A biodegradable and biologically active product that is used for the bio- augmentation of oil contaminated areas. This includes landfill, water and waste treatment applications. The products decrease total petroleum hydrocarbon (TPH) which makes up grease and oils.

#### **Product Variants:**

This product comes in a ready to use

- 25 kg bags poly bag

#### **Bacterial Consortium:**

Bacteria

- GPA 6.2-Bacillus mythyotropicus
- GPA 7.1-Bacillus subtilus
- GPA 11.2-Bacillus subtilus

#### **Product Specifications:**

Colour: Brown

Appearance: Powder

Smell: Natural

pH (Dissolution):  $6.0 \pm 0.5$

#### **Cell concentration**

$1 \times 10^9$  CFU. Gram -1

Colour Orange Brown

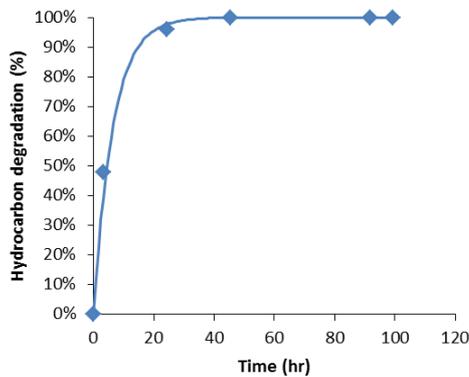
Appearance Powder

Smell Acidic Natural

pH (Dissolution)  $4.7 \pm 0.1$   $6.0 \pm 0.5$

#### **Application:**

Total petroleum hydrocarbons is a term used for any mixture of hydrocarbons that are found in crude oil or derived therefrom. The bacteria in the product breaks down TPH.



*This figure shows the complete hydrocarbon degradation in TPH contaminated water using FBB technology.*

The powder derivatives of this product incorporate activation nutrients which aids in growth of the bacteria under nutrient deficient or nutrient imbalanced conditions.

**Ready to use product applications include:**

- The biological treatment of oil contaminated soil.
- The biological treatment of liquid effluents generated by industry.
- Oil spill treatments.

**Ongoing use of the product correctly will have the following benefits: -**

- Bioremediation of the oil waste
- Lowers tendency for oil waste to leach to ground water and cause contamination
- Reduces unpleasant odour
- Less growth and transfer of pathogenic disease causing organisms
- Reduced environmental pollution

**Dosage:**

Microzyme Surf Clean Powder:

**For bio-remediation of solid waste** add 1- 5 kg per cubic meter. Disperse evenly across waste to be treated. In some cases additives such as peat, sawdust or clay are used to improve dispersion and moisture retention.

Monitor and repeat dose monthly or as deemed necessary, to complete the bioremediation process.

Always maintain effective dosage.

**For Soil contamination:**

1. Firstly, if it is a fresh spill, it is contained using absorbents. The absorbents are poured around the spill to make sure it does not spread. It also absorbs the excess oil.
2. The soil is excavated up to the deepest level of contamination.
3. The soil is either treated in place (in situ) or moved into a bunded containment area (ex situ), before samples are taken.
4. All large clods of soil need to be broken up to ensure even coverage by the microbes.
5. The microbes including activation nutrients are then mixed into the soil. 1kg of Microzyme Surf Clean Powder is used for 1m<sup>3</sup> of soil to be treated per dose. In some cases, a double dose is used where it is suspected likely to complete the treatment in a single treatment step.
6. Some treatment experts will first mix the powder onto a carrier/adsorbent (~1kg into 20L) such as coco-peat, coco-husk, clay, etc. to get a more even dispersion of the microbes and to improve moisture retention. In this case, the microbes are first mixed into the carrier/adsorbent and then the entire contents are mixed into the soil.
7. The soil is then sprayed with water (typically 10 to 20%, depending on moisture) and only when necessary a bio-degradable eco-friendly degreaser is added to assist in the remediation process.
8. In some cases the microbes, water and a biodegradable degreaser may be premixed and sprayed onto the soil passing on a conveyor to enhance emulsification and provide even dispersion.
9. Depending on the scale of the work, the treatment may need to be mechanized.
10. The treatment is typically repeated ~once monthly. Depending on the nature and load of petroleum hydrocarbon the complete treatment process can take between 1 to 9 months. Soil samples are taken and measured for TPH to determine the level of treatment, which informs whether another dose is necessary.

**Usage considerations:**

- Control pH ~ 7.00
- Ensure that treatment system is properly mixed.
- Ensure sufficient air supply
- In solids applications maintain moisture around 30%.

- Do not use non-biodegradable detergents
- Do not use anti-bacterial or biocidal (kill the good bacteria) products, as this will prevent the treatment from working.
- Do not use any harsh chemicals such as strong acids or bases as this will kill the bacteria. All the ingredients for effective bioremediation are included in the product.

**Safety:**

- Non-hazardous.
- Non-carcinogenic.
- Non-genetically modified.
- Non-pathogenic

**Key Features:**

- Ingredients Readily Biodegradable (OECD 301)
- Biological active (contains active natural bacteria)
- Compatible and enhances water treatment and water re-use systems
- Packaging minimized, re-useable and recyclable
- Global Green Tag Certified

Designed to produce enzymes on demand: Active natural bacteria incorporated into the product produce waste degrading enzymes:

Protease	
Lipase	
Cellulase	
$\alpha$ -amylase	
Urease	
Xylanase	

**Starts the waste treatment process at source:**

Odour control	
Solids breakdown	
Phosphate	
Nitrate	
Nitrite	
Ammonium	
COD	
Fats Oils and Greases	

**Stability:**

The product is stable for 2 years when stored between 4 and 40oC. Due to the use of natural colorants, colour changes may occur.

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