



# TECHNICAL DATA SHEET

YOUR CHEMICAL SOLUTIONS PROVIDER



## DESCRIPTION

**Enro-Oil Treat** is a Concentrated Blend of Bacteria, carefully selected to provide Complete Biodegradable, Biological Treatment of any Hydrocarbon based oil spill. The **Enro-Oil Treat** is mainly used to treat soil contamination but will work just as well to treat contaminated water and even any oil that has been contained.



## FORMULATION/COMPOSITION

**Enro-Oil Treat** is an Environmentally-Safe, Blend of Non-Pathogenic Biodegradable Bacteria and an added nutrient pack, consisting of: Inorganic nutrients essential for microorganisms growing and feeding on hydrocarbons.

EnroChem has spent considerable Research and Development in developing the EnroChem Nutrient Pack which is automatically included in the **Enro-Oil Treat**.

Through countless tests EnroChem has recognised that simply adding the extra nutrients does not automatically achieve the desired results, rather it is the exact ratio and precise amount of each nutrient which is critical to the incredible overall performance and success of the **Enro-Oil Treat**.

Additional proprietary foods, nutrients and stabilisers listed are also included in the EnroChem Nutrient Pack.



## PROPERTIES/APPLICATIONS/USE

### PROCESS

The ideal situation is to achieve hyper-degradation (faster than normal) which occurs when there is a minimum  $1 \times 10^7$  oil degrading microbes per gram of contaminant.

Anything less and the bioremediation process becomes very slow, the more hydrocarbon degrading microbes present at the site of the spill, the faster and more efficient the remediation process.

The only lab test required is a simple, quick, and inexpensive biocompatibility test to determine if there are any substances present that would be toxic to the microbes, thus preventing them from doing their job.

Once a site is inoculated, the microbes quickly adapt to their new environment and begin the break-down of the pollutant. The speed with which this occurs is relative to the density of the needed microbe population.

The microbial product is a consortium of billions hydrocarbon digesting microbes in various carriers, and since growth of the microbes is exponential, the pollutant is quickly and efficiently degraded, resulting in a faster treatment or closure. As in all products, water and oxygen must be present to allow the microbes to break down organic waste into carbon dioxide, water, and soluble fatty acids. Fatty acids are a water-soluble food for fish and plants.

**Enro-Oil Treat** microbial products are a consortium of naturally occurring communities of aerobic and micro-aerophilic microorganism's single cells ranging in size from 1 to 10 microns.

When activated by water, they provide our customers the opportunity to activate the microbes at their convenience. Because microbes are living assemblage, it must be understood that they can be destroyed by caustics, high concentrations of chlorine, some solvents, and chemicals. X-raying the microbes will kill and destroy them.

Soil Treat microbes employ the concept of aerobic co-metabolism by using multiple strains of microorganisms. Other conditions must be taken into account, such as pH, temperature, salinity, type of contaminant, etc.

### Disclaimer / Non-warranty

This product has been subjected to limited tests and has been shown to perform well. The information contained herein is to our best knowledge true and accurate, but since the conditions of use are beyond our control, EnroChem Trading DMCC, disclaims any liability in connection with the use of this product and/or information. Warranty extends only as far as to the replacement of material shipped if not compliant with the specification as set out in the attached "Certificate of Analysis" and within the expiry period of the said product. All recommendations or suggestions are made without guarantee. It is good practice to conduct one's own application tests on a small area prior to using the product.



## PROPERTIES/APPLICATIONS/USE

### SOIL CONTAMINATION

1. Firstly, if it is a fresh spill, it should first be contained using high efficiency eco-friendly absorbents. These absorbents are poured around the spill to make sure it does not spread. It also absorbs the excess oil.
2. The soil is then dug up to the deepest level of contamination, and the total affected cubic volume is calculated. Take Total Petroleum Hydrocarbon (T.P.H.) readings to ascertain the level of soil contamination before treatment begins as well as pH readings. The pH must be in the 5,5 to 8,5 region.
3. The soil is either treated in place (in situ) or moved into a bunded containment area (ex situ).
4. If any large clods of soil exist, they should first be broken up into smaller pieces to ensure even coverage by the microbes.
5. The microbes and activation nutrients present in **Enro-Oil Treat Powder** are then mixed into the soil. 1kg of Soil Treat Powder is used for 1m<sup>3</sup> of soil to be treated per dose. In some less severe cases, a double dose may be used where it is suspected likely to complete the treatment in a single treatment step.
6. To ensure a more even dispersion of microbes, Soil Treat Powder can first be mixed into a carrier/adsorbent such as coco-peat, coco-husk or clay. In this case, the microbes are first mixed into the carrier/adsorbent and then the entire contents are mixed into the soil. Mix at a ratio of 1:10, i.e. 1Kg Soil Treat Powder plus 9Kg carrier/adsorbent.
7. The soil moisture content should ideally be in the 20% to 30% range. If the soil moisture content is below that level, then the soil should be sprayed with water to achieve the ideal moisture content. When the level of contamination is severe or a quicker result is required, an eco-friendly dispersant, can be added and sprayed to assist in the remedial process. This has the effect of significantly increasing surface area available, and consequently assisting the microbes bind with and penetrate the oil interface more effectively.
8. The treatment procedure is typically repeated once monthly. Depending on the nature and load of T.P.H. the complete treatment process can take anywhere between 1 to 9 months. Soil samples are taken and measured for T.P.H. to determine the level of treatment, which informs whether another dose is necessary.
9. The more microbes and nutrients are added, the faster and more efficient the degradation process becomes.



**SAFETY & HANDLING** Always consult the Material Safety Data Sheet before use

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**PROPERTIES/APPLICATIONS/USE**

**WATER CONTAMINATION**

1. The oil spill will first need to be contained with barriers.
2. The oil will then need to be absorbed as much as possible with absorbents and then collected afterwards.
3. The left over oil is then treated either treated in place (in situ) or moved into a bunded containment area (ex situ).
4. Take Total Petroleum Hydrocarbon (T.P.H.) readings to ascertain the level of water contamination before treatment begins as well as pH readings. The pH must be in the 5,5 to 8,5 region.
5. The microbes and activation nutrients present in **Enro-Oil Treat** Powder are then mixed into the contaminated water. 1kg of Soil Treat Powder is used for 1m3 of water to be treated per dose. In some less severe cases, a double dose may be used where it is suspected likely to complete the treatment in a single treatment step.
6. The water portion should always be 20% to 30% or higher range. If the water portion is below that level, then more fresh water will need to be added to the contaminated water.
7. The treatment procedure is typically repeated once monthly. Depending on the nature and load of T.P.H. the complete treatment process can take anywhere between 1 to 9 months. Water samples are taken and measured for T.P.H. to determine the level of treatment, which informs whether another dose is necessary.
8. The more microbes and nutrients are added, the faster and more efficient the degradation process becomes.

**PHYSICAL & CHEMICAL PROPERTIES**

Physical state	Yellowish Powder	pH (Conc. at 25°C)	N/A
Appearance	Yellow/ Beige	Boiling Point	N/A
Odour	Neutral	Flash Point	Not Flammable
Specific Gravity (Density)	N/A	Melting Point/ Range	Not Available
Solubility	Soluble in Water	% Solids Content	N/A

This data does not constitute a specification - please see current "Certificate of Analysis".



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- Microbes are collected from naturally occurring sources.
- Potential pathogens to man, animals, or plants are excluded by the cultivation of our microbes in a proprietary process.
- Microbes are routinely analyzed for dangerous and toxic microorganisms, and are human, animal and plant pathogen free.
- Extensive laboratory and field tests have documented the efficiency, safety, and reliability of Soil Treat

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