

Petrolsynth®
Geolife® technology

**Bioremediation program for soils
and waters contaminated with
hydrocarbons and heavy metals**



 **SWISS
MADE**

Bioma®



A Swiss company with more than 30 years of international presence.

BIOMA is a company active in the production and marketing of "Chemical free" and "GMO free" solutions for the food industry, oenology, agriculture, environmental bioremediation, zootechnics and animal and human well-being.

Our products optimize all biological processes through indigenous microbiology and make it possible to reach an optimal balance in the targeted biomass. We seek to minimize the environmental impact within each structure.

The purpose of BIOMA solutions is to optimize production while guaranteeing economic sustainability



GMO-free



Chemical-free



Risk-free

Geolife® technology **An innovative manufacturing and patented process.**

Geolife® is a technology for the extraction and stabilization of organic compounds allowing the activation of our products. This technology makes our products unique, easy to use and safe for the user, animals and the environment.

Petrolsynth®

Bioremediation program for soils and waters contaminated with hydrocarbons and heavy metals

Petrolsynth®- Hydrocarbons and heavy metals bioremediation system.

OBJECTIVES

On soil
and
water



Increases the biodegradation of hydrocarbons and derivatives in a completely natural way and on site

Boost in kinetics of redox processes

- Bioremediation of environmental matrices contaminated with hydrocarbons and heavy metal exploits the action of environmental microorganisms that can use these pollutants as a source of nutrients.
- The remediation process works by creating in soils and waters the ideal conditions to boost kinetics of redox processes degrading carbon chains to simpler organic compounds, as well as kinetics of heavy metal sequestration processes with conversion of heavy metals into inert forms.

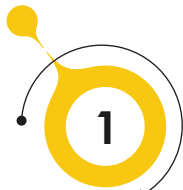


Petrolsynth® kit of 2,5 kg per month to treat up to 400 m² of surface, or up to 40 m³ of terrain, sludge or liquid contaminated with hydrocarbons up to 80,000 mg/kg.

Soil applications

Petrolsynth® 1

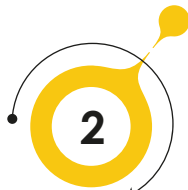
Lipoprotein-based activator



Milk powder
(lipoprotein substrate)

Petrolsynth® 2

Microorganism and enzyme mixture



Lyophilized powder
(mixed natural culture)

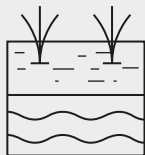
Petrolsynth® 3

Liquid activator



(Deionized water,
Ascophyllum nodosum,
Arthrospira)

Preparation



Refer to the instruction leaflet enclosed with the kit

When to apply?

Petrolsynth®



+

Petrolsynth®

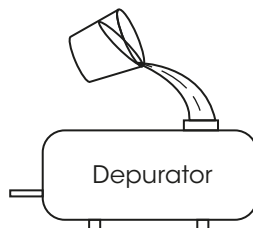


Petrolsynth®



Petrolsynth® 1+2+3

Petrolsynth®



A single application for 400m² or up to 40m³ of terrain, sludge or liquid contaminated with hydrocarbons

Our results

2016 - Analyses carried out on hydrocarbon-contaminated sludge from Ponte di Egola, Italy.

Parameter	U.M	Results				Method
		Sample as is	5 days later	10 days later	15 days later	
Antimony	mg/kg(dm)*	1982	1656	1220	974	EPA 3050B+APAT 3020
Arsenic	mg/kg(dm)*	444	321	195	24,9	EPA 3050B+APAT 3020
Nickel	mg/kg(dm)*	309,4	165	154,6	62,5	EPA 3050B+APAT 3020
Vanadium	mg/kg(dm)*	967,5	703	418	56,2	EPA 3050B+APAT 3020
Mercury	mg/kg(dm)*	7,07	0,87			ISO 17852:2006
Hydrocarbons	mg/kg(dm)*	81000		34000		UNI EN 14039:2005

* (dm) dry matter

2001 - Analyses carried out on hydrocarbon-contaminated mud from Interporto di Livorno, Italy.



Heavily hydrocarbon/mineral oil contaminated sample (T-zero, as received for analysis).



Same sample after treating with Petrosynth® (T-48, 48 hours after).

After 48 hours of treatment with Petrosynth®, heavy metals were determined obtaining the following results:

Parameter	U.M	CONC. † 0	CONC. † 48 h	% Abatement
Cadmium	mg/l	0	0	
Copper	mg/l	3,63	0,56	84,64
Lead	mg/l	5,05	0,93	81,58
Total Chromium	mg/l	1,75	1,29	26,29
Iron	mg/l	620,50	89,53	85,57
Zinc	mg/l	13,75	2,32	83,10
Boron	mg/l	5,98	3,83	35,99
Nickel	mg/l	2,68	0,41	84,67

Conclusions

- Results show a significant degradation of complex organic compounds and a remarkable reduction of metal content.
- PH measurements at the initial time and after 48 hours substantially show neutrality, indicating that the heavy metal abatement does not take place through chemical-physical processes implying pH variations (alkalization).

Processing and conservation:

Microorganisms and enzymes for the remediation of soil and water contaminated with hydrocarbons and heavy metals.

Closed packaging, can be stored for 2 years in a dry environment between 10°C and 43°C, protected from sunlight. Opened packaging, can be stored for 3 months at room temperature and protected from sunlight (if properly closed and protected from humidity).

Composition:

Petrolsynth®

Dried and selected cultures of microorganisms on a substrate of cereals and talc.

Classification and labelling:

Chemicals are classified according to their level of physical, health and environmental hazard. These hazards are indicated by specific labels and safety data sheets (SDS). With the GHS (Globally Harmonized System), hazard statements have been worldwide standardized so that the recipients of the information (production workers, first aiders and consumers) can better understand the hazards of the chemicals used. In the EU, the principles of the GHS are ratified in the EU-1272/2008 (CLP) regulation.

In accordance with this regulation, the Petrolsynth® range does not require classification or labelling according to its physicochemical properties, its effects on the health and safety of the environment and does not require a safety data sheet.

The Petrolsynth® range includes only organisms that are naturally present in nature and non-hazardous (WHO Class 1).





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