

# UNITED REMEDIATION TECHNOLOGY

## PRP® ADVANCED HYDROCARBON SORBENT

### PRP Technology:

UniremTech's PRP® family of remedial agents use Nature to effectively manage and remediate releases of petroleum hydrocarbons in a green and sustainable manner. PRP® is the registered brand name of UniRemTech's oil spill response sorbent created using a manufacturing application developed by the National Aeronautics and Space Administration (NASA). NASA, working in conjunction with industry scientists, developed an encapsulation process that enables the production of hollow, buoyant capsules. This resulted in the development of *Petroleum Remediation Product (PRP)®*.

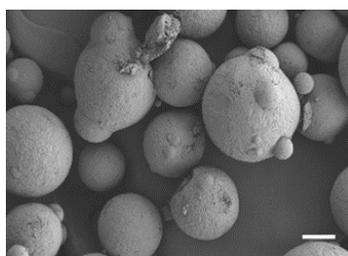


The PRP® Family of Products

PRP® is a powder of formed, hollow wax microcapsules. The microcapsules average 50 microns in size and appear as a fine powder. PRP® has a natural affinity for hydrocarbons and will immediately combine to encapsulate petroleum molecules. PRP® is also highly hydro-phobic and cannot be mixed or dissolved in water even after absorbing spills. PRP® is composed of a proprietary blend of natural ingredients. One of the principle ingredients is beeswax which contains nitrogen, phosphorus and potassium, nutrients for microbes which utilize the blend of PRP® and absorbed petroleum.

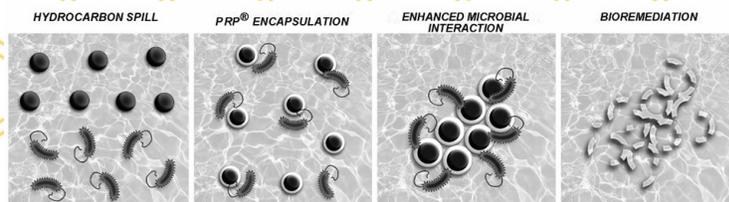


PRP® Powder



PRP® Microspheres (x1000)

### The UniRemTech Approach:



PRP® works in two stages – an absorption stage and a remediation stage. On and in water, PRP® absorbs petroleum and forms a floating matrix. This action changes the sticky nature of petroleum, greatly reducing the interaction and impact on wildlife. Additionally, PRP® facilitates the natural degradation and disappearance of the combined materials. Indigenous microbes use the combined material as a source nutrition and will, over time, consume the matrix. The wax-sorbent application rate is one part of sorbent to 2 parts petroleum. PRP® will not sink or combine with water even after absorbing petroleum.

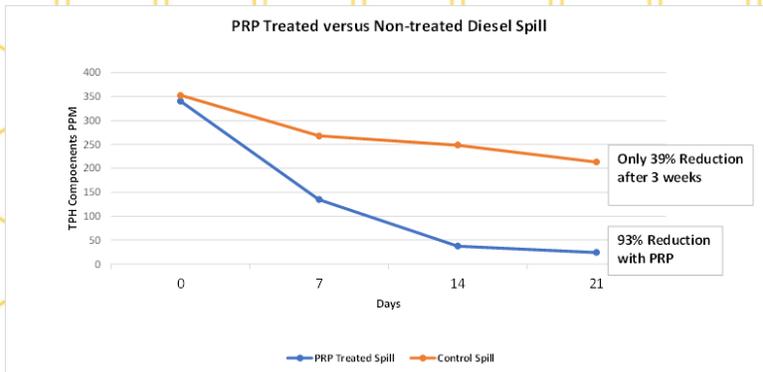
On hard surfaces and land, PRP® and another of our family of products, OilBuster®, acts in a similar fashion by absorbing petroleum and facilitating microbial bioremediation. OilBuster® offers the benefit of sweepability and fluidity in certain applications. OilBuster® works well on shop floors, railway beds and other potentially high-traffic areas.

What makes PRP® unique is its natural composition that affords a “green” remediation method for treating releases of petroleum hydrocarbons. PRP® is composed of microspheres of beeswax and soy wax. This combination of technology and natural products allows this agent to maintain its buoyant qualities even when saturated with petroleum. The uniqueness of PRP® and its delivery system is apparent when treating water-borne hydrocarbons released under a variety of climatic or physical location conditions. Since it is composed of beeswax and soy wax, PRP® serves as a catalyst for hydrocarbon-degrading enzymes which facilitate microbial metabolism of the petroleum hydrocarbons.

PRP® can be deployed either by hand or broadcast over large areas using a hydro-seeder (leveraging the hydrophobic quality of the agent). Consequently, PRP® provides a barrier between released oil and the water, vegetation, land, and wildlife by reducing the stickiness of the oil and facilitating its remediation. PRP® can be used in conjunction with and enhance the effectiveness of powdered microbial products. However, it is important to understand that PRP® cannot work where surfactants, soaps, dispersants, detergents or chlorine exist since these agents interfere with the matrix development chemistry.

## Research and Efficacy Support

PRP® has been scientifically evaluated since 1993 via third party tests conducted by the National Environmental Technology Applications Corporation (NETAC) and other independent labs. Full field demonstrations using PRP® have been conducted in US, Europe, Nigeria and Brazil. The lab and field studies show that the use of PRP® greatly accelerates the disappearance of petroleum over control spills without PRP®. In most cases, 90% or more Total Petroleum Hydrocarbon (TPH) is remediated in two-weeks or less. Source:



NETAC Research & Analysis

PRP® has been tested for toxicity against other leading remediation chemical agents and indicates orders of magnitude benefits for marine life:

Agent/Pollutant	Marine Test Specimen	LC50 (ppm)*
COREXIT 7664	Mysidopsis Bahia	751
COREXIT 7664	Menidia Beryllina	899
COREXIT 9527	Mysidopsis Bahia	27
COREXIT 9527	Menidia Beryllina	45
PRP	Mysidopsis Bahia	68,000
PRP	Menidia Beryllina	354,000
#2 Fuel Oil	Mysidopsis Bahia	3.3
#2 Fuel Oil	Menidia Beryllina	3.7

## Regulatory Concurrence

PRP® was originally listed in the mid-1990s on U.S. EPA's National Contingency Plan Product Schedule as an oil spill response bioremediation agent. EPA subsequently re-classified PRP® as a sorbent due to its ability to absorb and hold oils in a surface water release.

In addition to the EPA acceptance, the U.S. Coast Guard's ARTES review has also accepted PRP® as sorbent for use in ecologically sensitive areas. PRP® and its family of products have received approval for use in many States and from regulatory agencies worldwide.



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## "Green & Sustainable" Agent

PRP® is a "green & sustainable" remediation technology because it is mechanically formed out of readily available natural wax products that will biodegrade along with the oils it has absorbed. These qualities make UniRemTech's agents unique in that they usually do not require secondary disposal. The floating wax matrix will disappear over time dictated by microbial flora where it has been deployed. In the future, this quality will become increasingly important for petroleum sorption markets seeking natural methods of petroleum release control.

## Specialty Applications and Products

<b>WellBoom®</b>	PRP® in a weighted sock for vertical deployment in a groundwater monitoring wells	<ul style="list-style-type: none"> <li>Subsurface remediation (UST Leaks)</li> <li>Groundwater test well management</li> </ul>
<b>BioBoom®</b>	PRP® in 5 foot, 10 foot or custom length floating booms	<ul style="list-style-type: none"> <li>Spill containment/diversion</li> <li>Absorption and remediation</li> <li>Marinas, Coastal, Swamps, Lakes, Rivers, parking lots, water runoff areas</li> </ul>
<b>BioSok®</b>	PRP® in 3"x10" and 2"x6" floating booms for deployment in boat bilges.	<ul style="list-style-type: none"> <li>Boat bilge management and remediation</li> </ul>
<b>BDTM®</b>	OilBuster® deployed in conjunction with walkable track mat	<ul style="list-style-type: none"> <li>Rail beds</li> <li>Rail yards</li> <li>Chemical treatment plants</li> </ul>

## Specification and Safety Information

COMPONENT NAME	% EXPOSURE LIMITS	SEC 12 INFO
Filtered Beeswax	No	Yes
Filtered Soy Wax	No	Yes

PRP® is a non-combustible, non-reactive, granular, solid material. It is supplied in the form of small particles. Use methods suitable to fight surrounding fire. Exposure to dusts may be irritating to eyes, nose, and throat. At very high exposure levels, the dust may have an effect on the lungs. Firefighters should wear self-contained breathing apparatus and full protective clothing. Use extinguishing methods suitable for surrounding fire.

## About UniremTech

United Remediation Technology is a US-based company that produces products based on our proprietary PRP® powder for the purpose of cleaning up oil and fuel spills all over the world. They utilize all-natural ingredients and technology derived from NASA's space program so that petroleum spills can be handled in a safe and natural way with no harmful effects to the environment.