

Sea ReClaim™ Sorbent

*Earth's Natural Buoyant Oil-Binding Materials for
Immediate and Effective Reclamation of Oil Spills*

TECHNICAL BULLETIN #2

APPLICATION





Sea ReClaim™ Product

We call our product “Sea ReClaim™” to speak to its function, composition and mode of action. Sea ReClaim™ is a floatable oil binding material for immediate and effective reclamation of oil spills. It works with all types of crude which is dependent upon the process used. Sea ReClaim™ uses nature’s nanotechnology to reclaim the oil and reclaim the sea. The power of natural nanotechnology comes not from the chemistry but from the high surface areas and the natural physical properties of the mined materials themselves. Sea ReClaim™ is composed of natural and modified natural scoriaceous material found naturally in the earth which is currently obtained by mining and metallurgy.

Sea ReClaim™ is a sorbent material and consists solely of the materials listed in § 300.915(g)(1) of the NCP. But it exhibits some of the properties of solidifiers with one distinct difference: it does not transform the oil chemically into a new substance but uses natural physical properties instead to agglomerate the oil into a semi solid mass that can be readily harvested. There is another unique difference. The physical process used for agglomeration and solidification can be reversed by high heat, and the oil can be reclaimed and the raw materials recycled or disposed. Hence Sea ReClaim™ has the benefits of sorbents with some of the properties of solidifiers without the toxic and disposal issues. Sea ReClaim™ is enviro-friendly.

Sea ReClaim™ is also formulated to achieve three things as the means to providing a total solution to crude oil spills: (a) reclaim the oil; (b) naturally eliminate malodors found in crude oil; and (c) permanently and irreversibly bind toxic heavy metals found in both the crude oil and transferred by crude into the sea.

The reaction time for the agglomeration of sweet crude to a semi rigid cake is approximately 10 minutes. Sea ReClaim™ works best in an agitated environment as realized in open seawater. The procedure used for dispersing the material and recovery will depend upon the type of crude oil. Perpetually hydrophobic in nature, Sea ReClaim™ not only floats on the surface of the water but also adheres immediately to any floating petroleum based product and builds a solid mass without the detrimental attributes associated with crude oil. Its incorporation into the contaminant stream results in a floatable, recoverable, recyclable sub product of its original polluting form. All ingredients incorporated into our premier formula are



derived from earth’s inorganic resources and are Generally Regarded As Safe (GRAS) materials 100% safe to humans, the environment and marine fauna and flora.

Application

Small Surface Spills

For small scale spills on water (salt or fresh), Sea ReClaim™ can be broadcast directly onto the spill, spreading a thin layer from the outer edge into the middle of the spill. Agitation is not necessary but may be helpful.

Large Surface Spills

For large spills on water (fresh or salt), Sea ReClaim™ may be deployed with an air stream directed at the leading edge of the spill. Because of its particulate nature, static buildup may occur if the product is applied at a high rate of delivery. Dispensing equipment should be properly grounded to prevent this. The product is relatively non-abrasive and should not harm machinery or pumping systems. Agitation is not necessary but may be beneficial, especially when the oil spill has been previously treated with other agents or dispersants. Mixing can be accomplished by use of wave action, vessel propellers (wake), and pole mixers or air jets below the surface of the water. The material has a specific gravity of less than one and will move to the surface of the water. Oil and Sea ReClaim™ have a natural affinity for each other and Sea ReClaim™ will seek out the oil.

Application to Reeds, Grass and Other Aquatic Plants

Sea ReClaim™ may be used to clean weeds, reeds, and other aquatic plants by physically contacting the Sea ReClaim™ with the plant material. This can be accomplished by placing the material on the plant material by broadcasting or by hand action. To maximize the removal of oil from the plant material, it is best to agitate or rub the Sea ReClaim™ onto the surface of the plant. As the Sea ReClaim™ and the oil are removed; the complex can be reclaimed by collection using standard methods.

Application on Beaches to Prevent Oil and Tar Ball Entrenchment

Frequently crude oil and or tar balls wash up on beaches and may be left there as the tide recedes. Material may remain on the surface of the sand until the next tide comes in and may subsequently be covered by additional sand and more oil and tar balls. This



gives the appearance of burying the oil but is just the natural action of tide and wave action. Oil from the Alaskan Valdez spill is still found by digging into the beaches some 40 years after the original spill.

To minimize this buried tar and oil phenomenon, Sea ReClaim™ can be placed on the surface of the sand to collect the oil and tar and make it less adherent to sand to either allow it to work its way to the surface over time or to allow it to be recovered by standard methods currently in use for routine beach cleaning. Such methods include raking or the like.

Piers, Pilings, Rocks and Other Hard Surfaces

Oil may be removed from physical objects such as piers, pilings, rocks and other hard surfaces by rubbing Sea ReClaim™ material on the surface of the object working it into the adhered oil. Sea ReClaim™ will attract the oil and encapsulate it for collection by standard means.

Heavy Crude or Crude Oil with High Asphaltenic Content

For spills with high asphaltenic content or other heavy (viscous) crude oils, Sea ReClaim™ may not bind and hold the crude oil with the same efficiency or in the same manner as with light crude oils. To bring the high asphaltenic oil into contact with Sea ReClaim™, agitation may be needed to blend the material. As Sea ReClaim™ binds the oil, it may start out with the appearance of granola before blending is complete. If this is encountered, it will be necessary to provide some means of agitation to the spill to improve the contact and blending of Sea ReClaim™ in binding the oil. Mixing can be accomplished by use of wave action, vessel propellers (wake), and pole mixers or air jets below the surface of the water. The resultant mix will be an amorphous agglomerated non-sticky semi-solid or solid material which is easy to recover without binding to the clean up equipment. Submerged oil when fully blended will float on the surface.

Land Spills

For spills on land, the product would be applied in the same manner as in the water-based spill situation. Agitation is not necessary but may be beneficial. Contact is obviously necessary. To recover solidified oil or hazardous materials from spills on land, the spent material may be collected and swept up using an industrial vacuum cleaner, broom, or shovel. The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations or preferably returned to the manufacturer for reprocessing.



Concentration/Application Rate

In general, a 10% to 30% by weight application is required to solidify light, medium, and heavy oils. Solidification may occur faster if additional Sea ReClaim™ is applied. Since Sea ReClaim™ coalesces and aggregates with itself and with the oil, any additional material can be harvested along with the used material. The unused material may be reused or recycled with the harvested contaminated material. If unused material is still floating on the surface in its natural coalesced form it may be redeployed, or directed by guided movement, to the new area for use.

Disposal

The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations or preferably returned to the manufacturer for reprocessing.

Conditions for Use

Sea ReClaim™ is equally effective in fresh or salt water, and under any weather conditions; however, colder temperatures may slow the solidification process. The product is most effective on water temperatures between 32°F and 120°F. Depending on the age and/or viscosity of the oil containing material, varying amounts of Sea ReClaim™ may be required to obtain complete solidification. The recovered solidified oil or resultant non-hazardous materials may be landfilled, incinerated, used as a secondary fuel, or otherwise disposed of according to federal, state and local regulations or preferably returned to the manufacturer for reprocessing and reclamation.

Examples of Application Tools

Sea ReClaim™ can be applied by hand, spread by dumping or by use of special super sack bags. It can also be placed in bags, booms, boat holds, barges, helicopters or aerial spray planes, etc. by those wishing to take advantage of its unique properties. It can also be broadcast by mechanical means using a variety of commercial spreaders. Examples of such products are listed in the table below.



Type of Equipment	Example	Advantages	Disadvantages
Hand Powered Personal Applicator	- Solo Chemical Granule Spreader	- Inexpensive - Easy to carry - Readily available	- Inefficient for large applications - Labor intensive
Motorized Personal Applicator	- Solo Motorized Mist / Dust Sprayer	- Improved worker efficiency - Even Application	- Initial Investment - Needs fuel source
ATV Application	- Earthway 12V ATV Broadcast Spreader - A1 Utility Ranger	- Very rugged - Relatively inexpensive - Multi purpose - No defined site infrastructure	- Storage and transport for machine - Requires heavy duty ATV/RTV - Needs fuel source
Truck / Trailer Application	- Easy Lawn Granular Hydroseeder - A1 Super Duty - Tifone Airblast Cannon - Finn Granular Hydroseeder	- Excellent coverage - Easily transportable - Large area application	- Moderate initial investment - Requires moderate to complete site infrastructure
Aerial Application	- Schweizer 300 / Isoair Initiator - Air Tractor - Piston Engine Robinson R-44 - Turbine Engine Bell 206B Jet Ranger	- Ideal for large open sites - Requires no site infrastructure	- Profitable only on large scales - Substantial initial investment and maintenance costs

Potential Benefits of Use of Sea ReClaim™ for Spills

- A method for the treatment of oil from open aqueous spills, leaking underground storage systems, and in contaminated soil.
- Reclamation of oil from oil spills through extraction of oil from matter composites.
- Maintenance of floatation (surface buoyancy) of crude oil on the surface of water thus preventing settling to the bottom and allowing for control of the oil spill with easy clean up.



- Prevention of the spread of crude oil on aqueous surfaces resulting in readily identifiable floating clumps that remain on the surface of the water until harvested. Clumps do not leach out oil over time.
- Hydrophobic buoyant matter compositions resulting in an agglomerated, cross-linked matrix that is perpetually buoyant until harvested.
- Maintains the ability to identify, recognize, and control the movement of spilled oil after agglomeration.

Unique Features of the Sea ReClaim™ Product

The following is a list of unique features for the Sea ReClaim™ Product relative to other oil treatment methods.

- Does not sink like other sorbents.
- Oil can be re-released after absorption unlike other sorbents or solidifiers.
- Can be used on the oil's surface, unlike some other sorbents.
- Perpetually buoyant both before and after contact with oil.
- Does not disperse on the surface continually unlike some other sorbents; coalesces unto itself.
- Uses absorption, adsorption, and two solidification processes.
- Both oleophilic (oil attracting) and hydrophobic (water repellent) unlike some other sorbents.
- Actually prefers oil and seeks it out.
- Solidification involves both hydrocarbon physical attraction enhanced by van-der-Waal's forces, and hydrogen bonding through mixed clathrate formation.
- Works with all types of crude oil depending upon the process used.



Eco Renaissance™ Environmental Products

Sea ReClaim™

"Reclaiming the oil reclaiming the Sea"

- Applicable to floating surface oil; oil floating right below the surface; submerged oil deep below the surface; floating oil in coastal contact; oil washed up on the shoreline; removal of oil attached to surfaces.
- Works with oil with or without prior use of oil dispersant material.