



ENVIROGEL® Products

ENVIROGEL® 8: Coarse granular gradation for use in coarse grained soils or when applying the Pure Membrane Method or the Sedimentation Method.

ENVIROGEL® 10: Blend of fine granules and powder for use in medium to fine grain soils and with either the Pure Membrane or the Mixed Membrane Method of application.

ENVIROGEL® 200: For use in fine grain to silt or clay soils, ENVIROGEL® 200 is used exclusively in the Mixed Membrane Method during conventional mixing operations or in pugmill blending.

Specialty Blends: Often ENVIROGEL® is blended with other ingredients for use in application specific products. ENVIROGEL® PLUS and ENVIROGEL® MSW contain additives such as anionic polymers or buffers which aid in water wetting and in building resistance to contacted effluents.

Technical Services: WYO-BEN, Inc. maintains a research laboratory where knowledgeable technical staff are available to conduct permeability tests to help determine proper bentonite application rates.



Other Application Methods

Pure Membrane Method: A pure layer of ENVIROGEL® is laid down over a prepared substrate. Inclines must be very slight and the thickness of the barrier is usually from one-half to two inches thick.

Sedimentation Method: Utilized in areas where water cannot be removed, ENVIROGEL® 8 is broadcast or poured across the surface of the water, then sinks to the bottom. While not as efficient as the Mixed Membrane Method, this technique is effective for leaks identified in areas like gravel pockets or on dam faces. Treatment levels are generally three to six pounds per square foot.

*A Product that Protects
the Environment*



WYO-BEN, Inc.

P.O. Box 1979

1345 Discovery Drive

Billings, Montana 59103

800.548.7055, 406.652.6351

www.wyoben.com

email@wyoben.com



A Product that Protects the Environment

ENVIROGEL® is specially processed for:

- Industrial containment ponds
- Slurry cutoff trenches
- Lakes and aquascapes
- Solar evaporation ponds
- Waste water retention
- Oil spill containment
- Landfills
- Diaphragm walls
- Seepage control

ENVIROGEL® produces an effective, long-lasting and low-cost impermeable barrier between pollutants and our environment.

ENVIROGEL® is sodium montmorillonite (also known as sodium bentonite or western bentonite), a clay mineral valued for its high swelling and superior sealing properties. ENVIROGEL®'s unique molecular structure allows it to absorb five times its weight in water and is capable of swelling to a volume 12 to 16 times its dry bulk.

When incorporated into soil and hydrated, ENVIROGEL® expands to fill the tiny voids between soil particles. This remarkable swelling action effectively impedes the flow of liquids. It can also be dried and rehydrated indefinitely while still retaining its inherent sealing characteristics.

Where to Use ENVIROGEL®

LAGOONS, PONDS, RESERVOIRS

Before filling newly constructed water or wastewater impoundments, spread ENVIROGEL® at a predetermined application rate to provide the needed impermeability. Application rates typically range from one to four pounds per square foot depending upon the nature of the soil. After spreading ENVIROGEL®, thoroughly till or rotovate the bentonite into the top six inches of soil to form a homogenous soil-bentonite mixture. This mixture can then be compacted to the desired density using a vibratory drum or pneumatic tired roller.

Any area exposed to erosion, livestock or mechanical equipment, needs to be covered with riprap or soil to prevent damage to the liner.

LANDFILLS

Landfill floors are subject to leaching caused by rainfall passing through residential refuse and industrial wastes. By using a six to twenty four-inch mixed membrane bentonite liner with ENVIROGEL®, the bottom of the landfill is effectively sealed against a variety of liquid wastes. A system of collection pipes can then be placed above the bentonite liner to draw off excessive leachate for disposal off-site. When the landfill is eventually closed, another six-inch bentonite liner can be placed over the entire area to prevent water from leaching through the waste pile. The area is then covered with approximately two feet of soil to allow for growth of vegetation.

How to Apply ENVIROGEL®

The basic method for applying ENVIROGEL®, whether to lagoons, ponds, reservoirs or landfills, is called the **Mixed Membrane Method**, detailed below.

1. **Preparing the Surface.** Prepare soil by removing all rocks, debris, and other organic material that might penetrate the liner. Grade the area smooth and reduce the soil to near its native particle size. Before spreading ENVIROGEL®, make sure the soil is at its' optimum moisture content.
2. **Spreading.** Apply ENVIROGEL® uniformly across the surface using a fertilizer spreader or similar equipment. ENVIROGEL® may be applied by marking off the area in a square grid pattern and placing the proper number of 100 pound bags in each square. Break bags open and manually rake the surface.
3. **Mixing.** Thoroughly mix ENVIROGEL® into the soil with an adjustable-depth rotovator or tiller. While depth of tillage is based upon job-specific conditions, a four to six-inch liner is standard for many projects.
4. **Compacting.** Compact the soil-bentonite mixture to the required density using a smooth wheel or wobble wheel compactor. A sheep's foot roller should not be used as it may puncture the liner.
5. **Protecting the Surface.** Areas subject to wind and wave erosion or mechanical abuse should be covered with riprap or a six to twelve-inch soil blanket to protect the liner. Areas with a fluctuating water level should be covered to keep the ENVIROGEL® fully hydrated at all times.