

# Sealing a Pond with Bentonite

Alabama Guide Sheet No. AL 521C



## Definition

Bentonite is a natural clay material that can absorb water and expand to several times its normal volume. Bentonite in a finely ground form can be mixed and compacted with the soil in the earthen surface of a farm pond or waste impoundment to impede or prevent excessive seepage. Bentonite treatment works best on coarse-grained soils or very silty, fine-grained soils.

## General Information

The area to be treated with bentonite must be properly prepared. The soil should be free of all vegetation, trash, roots, frozen soil, snow, ice, stones over 2 inches, and other objectionable material. The bentonite must be evenly applied over the surface to be treated. Application is best with either a drop type spreader or by hand. Spreaders that throw the bentonite into the air should not be used. When placed by hand, bentonite bags should be placed in a grid pattern according to the application rate, broken open, and the contents evenly hand raked over the grid area. (*Mask and goggles should be worn when handling bentonite to protect from dust.*)

The rate of application of bentonite and the resultant liner thickness to treat farm ponds should be based on laboratory tests or on acceptable procedures according to the soil type being treated and the planned depth of water. NRCS personnel can help determine these values.

Since waste impoundments have a potential to pollute groundwater, the rate of application of bentonite and the resultant liner thickness must be based on laboratory tests only.

Bentonite liners may have to be constructed in several 4 to 6 inch layers to achieve the designed thickness.

Water may need to be added to the soil prior to the introduction of the bentonite in order to achieve the proper water content for compaction. The bentonite in each layer should be thoroughly mixed with the soil using rototillage or other approved methods. Each layer should be compacted with the specified equipment and properly bonded to other layers using appropriate construction techniques.

The minimum thickness of a finished bentonite treated liner is 6 inches. Water deeper than 6 feet will require a thicker liner.

Experience has proven that bentonite treated soil liners can be constructed only when soil moisture content and weather conditions are suitable. Construction should be started only when weather forecasts indicate sufficient continuous dry days to complete the job. Bentonite should be spread, incorporated, and compacted on the same day to eliminate problems due to unsuitable weather.

## Operation and Maintenance

The bentonite liner should be protected from drying and cracking, surface erosion, animals, and equipment. A protective soil layer of at least 6 inches should be placed over the liner for general protection. Any damage to the liner should be immediately repaired.

## References

NRCS AL Conservation Practice Standard  
Code – 378, Pond  
Code – 521C, Pond Sealing or Lining (Bentonite)  
Code – 313, Waste Storage Facility  
Code – 359, Waste Treatment Lagoon

