



## Leaking Pond Resolution

Baroid Benseal Granular bentonite  
50 lb. bags (22.73kg) / 48 bags per pallet

### Soil Type Application Rate

kg/m<sup>2</sup>

Blanket methods: 14-24 kg/m<sup>2</sup> (1 bag = 22.73kg)

Sprinkle method: 20-30 kg/m<sup>2</sup> (1 bag = 22.73kg)

Please see the Baroid Benseal Product Sheet for further detail on application rates and best process.

### What Is Sodium Bentonite?

Sodium bentonite is a natural sealant and is used for sealing stock and recreational ponds, dairy and sewage lagoons, and city landfills. It is also effective as a hole plug as well as for controlling dust on highways. Sodium bentonite is one of the most effective low cost methods of treating porous soils. It is so effective, that the US Federal Government and most states require a liner of Sodium bentonite or material comparable, to be used to seal toxic waste lagoons and abandoned water and oil wells. It is environmentally safe, because it contains no chemicals, no additives, nothing toxic.

### How Does Sodium Bentonite Work?

Sodium bentonite swells 15-18 times its dry size when wetted by water. Over several years of testing, sodium bentonite has proven to be one of the most effective sealants on the market. The United States E.P.A. has ruled that all landfills and waste disposal sites must be lined to prevent the leaching of hazardous chemicals into the existing ground water to protect the environment. The fact that sodium bentonite swells many times its mass, then forms a strong water and chemical proof seal makes it an ideal, inexpensive, permanent, and easy to install liner. Sodium bentonite is environmentally friendly and safe to use.

### There Are Big Differences in Bentonite

There are several companies selling bentonite clay for various markets. Some of these companies are misrepresenting their product because the public they are selling to does not know the difference.

At Blick Industrial, we are trying to educate the public on using sodium bentonite as a pond sealant.

1. There are two types of Bentonite clay.
  - **SODIUM BENTONITE:** Sodium bentonite has a natural swelling ability and will maintain its swelling ability throughout its use.

- **CALCIUM BENTONITE:** Calcium bentonite is a non-swelling bentonite. It will not swell without additives or chemicals. Calcium bentonite enhanced with additives will quickly lose its swell.

It is the swelling ability of the sodium bentonite that enables this clay to bond with the soil to create an impenetrable liner in the soil.

## 2. Bentonite is mined clay

The quality of the bentonite deposits will vary. Some deposits of sodium bentonite are very high quality swelling deposits, while others are not as good. Some of the best deposits are deep in the ground and will require many man hours recovering this bentonite.

So a good quality sodium bentonite begins with a good deposit!

## 3. Processing matters

All bentonite will contain a percentage of other minerals; Aluminum Oxide, Potassium Oxide, Magnesium Oxide, to name a few and a percentage of sand and silt. It is the process of removing the sand and silt from the bentonite that will produce a higher quality product. The process of removing most of the sand and silt takes time and is costly.

Some companies are not interested in producing a quality product. Thus they will use poor deposits of bentonite and process the material quickly enabling them to sell their product at a cheaper price. However, if this product were tested, it would probably result in a large percentage of sand; something a leaky pond does not need.

The key to using bentonite to seal a pond is:

- Use a high quality sodium bentonite
- Apply the product properly
- Use the recommended amount based on your soil type and square metres of area being treated.

## **Remember: Cheaper is not better!**

### **How Much Bentonite to Seal a Pond?**

In the bottom of a 20-25L pail, drill 20 to 25 3mm holes. Gather enough soil from the area to be sealed to fill about 75mm of the pail. You can either select the most porous soil, (sand) or a mixture of soil taken from several areas of concern in order to present an "average" soil.

In this soil, mix 0.5kg to 1kg of Benseal and tamp down in the bottom of the pail. Into this pour eight litres of water to see if the bentonite provides the necessary seal. If it is leaking, repeat the process and increase the amount of bentonite by 0.25kg until the water is contained within the pail.

The bottom of the pail represents about 0.1 square metres. When you know how many pounds of bentonite it takes to seal the pail, then we know how many kg per metre to distribute and roto-till into the pond, dam or other earthen structure.

## Bentonite Application Methods

### Mixed Blanket Method



- Drain the area to be treated and remove all rocks and plant growth.
- Use 1 part granular bentonite mixed with 5 parts soil to fill large holes and crevices.
- Plow the area to be treated to a depth of 100mm to 150mm and allow soil to dry.
- Divide the area to be treated into 1 metre squares and apply one bag of bentonite to each square.
- When the entire area has been covered, mix the bentonite with the top 75mm to 100mm of soil, using a disc, spike tooth harrow or hand rake, and then roll or tamp to compact it.
- Sandy soil works best for mixing with bentonite because it compacts better. If clay soil is used it must be fine and without lumps.

### Pure Blanket Method



- Drain the area to be treated.
- Spread granular bentonite (unmixed with soil) at a rate of one bag per 1 metre square over the bottom of the pond.
- Cover bentonite with 75mm to 100mm of soil, sand or fine gravel.
- This is the best method but requires the most care, because bentonite must cover the entire surface to prevent leaks.

## Sprinkle Method



- The pond does not need to be drained but the exact location of the leak must be known.
- Scatter granular bentonite on the water's surface wherever seepage occurs.
- Bentonite sinks to the bottom where it swells.
- The bentonite gel that is created is drawn into the leaky seams and closes them.
- This method is not as successful as the mixed or pure blanket methods but will generally work if the location of the leak is known and enough bentonite is used.

In all methods of bentonite application, it's the swelling of the particles that stop the leak. Bentonite will not stop the leak immediately. Some seepage is to be expected for up to a week after the bentonite is applied. Bentonite will not swell in water containing large quantities of mineral salts or acids.