

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD  
SOUTH DAKOTA SUPPLEMENTS ITALICIZED**

**POND SEALING OR LINING  
BENTONITE SEALANT**

(no.)  
CODE 521C

**DEFINITION**

Installing a fixed lining of impervious material or treating the soil in a pond mechanically or chemically to impede or prevent excessive water loss.

**PURPOSE**

To reduce seepage losses in ponds to an acceptable level.

This standard pertains to the sealing of ponds with bentonite or similar high swell clay materials.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies where water loss from a pond through leakage is or will be of such proportion as to prevent the pond from fulfilling its planned purpose or where leakage will damage land and crops or cause waste of water or environmental problems.

**CONSIDERATIONS**

**Water Quantity**

1. Effects upon components of the water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Variability of the practice's effects caused by seasonal or climatic changes.
3. Effects on downstream flows or aquifers that would affect other water uses.
4. Potential use for water management to conserve water.

**Water Quality**

1. Effects on the movement of sediment, pathogens, and soluble material substances carried by seepage water.
2. Effects on the visual quality of downstream water resources.
3. Short-term and construction-related effects of this practice on the quality of the pool and downstream water.
4. Effects of soil water level control on the temperatures of downstream waters to prevent undesired effects on aquatic and wildlife communities.
5. Effects on wetlands or water-related wildlife habitats.

**Laws and Regulations**

*This practice must conform to all federal, state, and local laws and regulations. Laws and regulations of particular concern include those involving water rights, land use, pollution control, property easements, wetlands, preservation of cultural resources, and endangered species.*

**CRITERIA**

Ponds to be sealed shall be constructed to meet *South Dakota Technical Guide* standards for Irrigation Pits or Regulating Reservoirs (552), Irrigation Storage Reservoirs (436), Ponds (378), Waste Treatment Lagoons (359), Waste Storage Facility (313), or Wildlife Watering Facilities (648), as appropriate.

**Soil properties.** Sealing with bentonite or similar materials is more applicable on coarse-grained soils where more than half of the soil material is larger than that passing the No. 200 sieve size.

Conservation practice standards are reviewed periodically and updated if needed. The current version of this standard is posted on our website at [www.sd.nrcs.usda.gov](http://www.sd.nrcs.usda.gov) or may be obtained at your local Natural Resources Conservation Service.

**Rate of application.** The rate of application shall be based on laboratory tests unless sufficient data are available on the field performance of previously tested soils that are similar in texture and chemical properties to the soils to be sealed.

In the absence of laboratory tests or field performance data on the soils to be sealed, the minimum application shall be:

Pervious soil	Application method	Application rate
		<i>lb/ft<sup>2</sup></i>
Clay	Mixed layer	1.0-1.5
Sandy silt ( <i>ML</i> )	Mixed layer	1.0-1.5
Silty sand ( <i>SM</i> )	Mixed layer	1.5-2.0
Clean sand ( <i>SP, SW</i> )	Mixed layer	2.0-2.5
Open rock or gravel	Clay or sand mixed layer	2.5-3.0

**Thickness of treated blanket.** The minimum thickness of the finished treated blanket shall be four inches for water depths up to eight feet. Additional thickness shall be provided for greater water depths and for areas subject to wave action.

## **PLANS AND SPECIFICATIONS**

Plans and specifications for sealing ponds with bentonite shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

## **OPERATION AND MAINTENANCE**

*A plan of operation and maintenance shall be prepared for use by the owner or others responsible for the system to insure that each component functions properly.*