

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

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.

SCOPE

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

PURPOSE

To reduce seepage losses in ponds to an acceptable level.

CONDITIONS WHERE PRACTICE APPLIES

The 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.

DESIGN CRITERIA

Ponds to be sealed shall be constructed to meet Standards for IRRIGATION PITS or REGULATING RESERVOIRS (552), IRRIGATION STORAGE RESERVOIRS (436), IRRIGATION SYSTEM, TAILWATER RECOVERY (447), PONDS (378), WASTE TREATMENT LAGOONS (359), WASTE STORAGE PONDS (425), or TROUGH or TANK (614), as appropriate.

Soil Properties

1. Unified Soil Classifications where bentonite can be used effectively as a sealant are ML, SM, SC, GM and GC. Course-grained soil must have 30-50% fines.
2. Where the soils are classed as SP, SW, SP-SM (and other dual classifications) GP, GW, and fractured bedrock, a soil containing fines may have to be transported to the site. Bentonite is then mixed with the soil to form a sealing layer.

Since bentonite is expensive at some locations in Nebraska an evaluation of the cost of additional bentonite versus the cost of transporting finer-grained soil to the site should be made.

Rate of Application

The rate of application shall be based on laboratory tests or field permeameter tests as described in the Engineering Field Manual (Ch. 11, Ponds and Reservoirs) or the field performance of previously similar soils.

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

Pervious Soil	Application Method	Application Rate lb/ft ²
Clay	Mixed Layer	1.0 - 1.5
Sandy Silt	Mixed Layer	1.0 - 1.5
Silty Sand	Mixed layer	1.5 - 2.0
Clean Sand	Mixed Layer	2.0 - 2.5

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resource Conservation Service.

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Thickness of Treated Blanket

The minimum thickness of the finished treated blanket shall be 6 inches for water depths up to 8 ft. Additional thickness shall be provided for areas subject to wave action. For water depths exceeding 8 feet, the sealing layer should be 12 inches thick.

PLANS AND SPECIFICATIONS

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