

WESTINGHOUSE SAVANNAH RIVER COMPANY  
SAVANNAH RIVER LABORATORY DIVISION

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CLAYMAX LANDFILL CAP (u)

**SUMMARY**

"Claymax" bentonite sheet is a candidate landfill cap for defense waste burial sites. Claymax permeability was estimated as  $2 \times 10^{-9}$  cm/sec. One by nine inch Claymax strips failed in tension under a 30 kg load with 25mm elongation. A test is planned to measure the durability of this material under two feet of overburden when traversed by heavy equipment.

**DISCUSSION**

A commercial product called "Claymax" consisting of one-quarter inch of bentonite clay between two geotextile sheets is a candidate landfill cap to replace kaolin caps. A permeability apparatus incorporating a 20 foot water head was operated for 56 days to estimate a Claymax permeability of  $2 \times 10^{-9}$  cm/sec (based on the last ten days when penetration was highest, see figure) compared with  $10^{-8}$ , the EPA max for a burial site cap. Five ml of sediment washed out of the Claymax, though none during the last ten days of the test.

During the test, the top geotextile pulled loose from its retaining ring when the bentonite expanded due to water adsorption. Expansion is the way the bentonite achieves its seal. Test results are probably unaffected because the bentonite



remained in place. However, future tests should incorporate a better hold down device such as an overburden of kaolin or porous rock. Prewetting of the bentonite before the water head is applied causes it to expand against the apparatus wall preventing water leakage around the sample OD.

Two 1 by 9 inch dry Claymax strips which were tensile tested at 5mm elongation per minute failed at 30 kg load with 25mm elongation to failure. The strength is that of the geotextile sheets as the bentonite fill is weak.

Arrangements are in progress to simulate burial mechanical durability by running heavy equipment over a 25 ft<sup>2</sup> Claymax sheet with a two foot soil overburden.

#### **QUALITY ASSURANCE**

Procedures for this experiment are detailed under Operating Procedure IWT-OP-015 which are included with all data in WSCR-NB-89-67, pp 72-74.

# Water Penetration of Claymax Under 20 ft Water Column

