

TR 11-171-172

R. 524

BENTONITE INVESTIGATION

Introduction

Savage River Mines propose to import 17,000 tons per annum of bentonite for use as a bonding agent in the pelletizing plant being built at Port Latta.

This project has been undertaken to examine local materials for suitability as bonding agents and thus replace the imported bentonite.

The ultimate test of suitability is the strength of the iron pellets made using the bentonite sample, but to make a preliminary sorting of samples submitted, sizing and viscosity tests only have been used.

Savage River Mines say that any deposit worth working would need to contain 4 to 5 years' supply.

The Samples

One sample was submitted by Pickands Mather on behalf of Mr R. S. Porteus, Burnie. This sample appeared to be a greyish fine grained kaolin and was obtained in the Circular Head area.

The other sample was a rather coarser grained, white, micaceous clay obtained from the Ben Lomond area. This sample was submitted by Mr R. Bugg of Launceston.

Bentonite Specifications

Grit Test—Twenty-five grams of bentonite, dried at 220-250° F, and 500 ccs of water are mixed for 5 minutes in a Waring Blender. The slurry is wet screened at 325 mesh. The percentage remaining on the screen should not exceed 5 per cent.

Marsh Funnel Test (Barrel Yield)—A quantity of 33.5 grams of dried bentonite ground to 70 per cent minus 325 mesh is added to 565 ccs of water and mixed for 5 minutes in a Waring Blender. The slurry is poured into a Marsh Funnel and the time for 500 ccs to pass through the funnel is taken. Minimum acceptable time is 26 seconds which would correspond to 90 Barrel Yield.

These specifications were supplied by Pickands Mather & Co., Burnie.

Testing

Grit and viscosity tests were undertaken on the materials and control tests using bentonite designated "Valclay—Blue Label" from Standard Chemical Co., U.S.A. were also undertaken.

GRIT TEST

Material mortar ground minus 100 mesh B.S.S. (152 microns) dried at 105°

Twenty-five grams material and 500 mls water mixed for 5 minutes with a Brookfield counter rotating mixer—speed control rheostat at 40—and the slurry wet screened at 350 mesh B.S.S. (43 microns).

RESULTS GRIT TEST

		%
Blue Label Bentonite	plus 350 mesh B.S.S.	2.9
Circular Head (Porteus)		
Sample No. 661923	plus 350 mesh B.S.S.	3.2
Ben Lomond (Bugg)		
Sample No. 662464	plus 350 mesh B.S.S.	16.0

VISCOSITY TEST

In the absence of sufficient information to perform the Marsh Funnel Test, viscosity measurements were made with a Brookfield RVT Synchro-Lechtric viscometer

The Marsh Funnel Test requirements regarding size and weight of sample and volume of water were adhered to, i.e., 33.5 gms dried material, 70 per cent minus 350 mesh B.S.S., 565 mls water. Mixing was as in the grit test.

RESULTS VISCOSITY TEST.

Blue Label Bentonite	Viscosity 45 cps.
Circular Head (Porteus)	Viscosity 14 cps.
Ben Lomond (Bugg)	Viscosity 16 cps.