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PIPE MAKING CLAY FROM DINMORE

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General.

The following is a report on pipe making clay submitted for examination from Dinmore Pottery Ltd. Queensland by Mr. H. Deane of S.A. Dept. of Industry.

Two bags of clay were received unbranded, and were mixed together for sampling. It was subsequently learnt that the clays were taken from two different bins at the pottery, called the Pipe Bin and the Brick Bin. All work was done on the mixed material from these two bags.

Summary.

The nature of the iron-oxide impurity in the clay appears to preclude the use of mechanical beneficiation on the material as received.

Magnetic separation proved unsuitable for removing the iron-oxide impurity.

Details of Test.

The clay was sampled and gave the following screen analysis.

<u>Screen mesh B.S.S.</u>	<u>% Weight</u>	<u>Cumulative %</u>
+ 10	8.6	8.6
14	11.9	20.5
22	21.4	41.9
30	14.4	56.3
44	11.1	67.4
52	8.8	76.2
60	6.4	82.6
80	6.8	89.4
100	1.3	90.7
150	3.6	94.3
200	1.1	95.4
- 200	4.6	100.0

The plus 10 mesh and -200 mesh fractions were submitted for a petrological examination and were reported on as follows.

"The clay contains numerous spherical segregations of iron-oxide (both limonitic and haematitic). These are very variable in size from several millimetres to microscopic dimensions.

It is suggested that these "concretions" in the clay are derived by the oxidation and hydration of minute pyrite crystals disseminated through the clay.

Since the iron-oxides do not constitute discrete particles, but impregnates the clay in a disseminated spotted manner the removal of these by metallurgical processes may prove most difficult if not impossible".

A 7 lb. sample was treated on a Stearns Type O magnetic separator.

Settings:-

Magnet 1.4 amps 220 volts
Gap Concentrate : - 15
Middling : - 12

Results:-

Product	% Wt.	% Fe ₂ O ₃	% Recovery
Conc. & Middling	0.975	21.05	3.9
Tail	99.025	5.13	96.1
Feed	100.000	5.27	100.0

The results indicate that no effective separation can be expected by magnetic separation means. Although a high grade iron oxide product can be rejected, the weight and consequent total percentage of iron oxide is negligible.

Conclusions.

The sample examined contains the iron oxides in a disseminated manner and ranging down to micron size. To cause liberation the clay would have to be ground to this size, when probably the intimate mixing of the iron oxides would not be deleterious.

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