

TR12-168.169

R. 553 PART 2

PICKANDS MATHER & CO INTERNATIONAL—BEACH SAND
CONCENTRATION

Introduction

As the table concentrate from Pickands Mather's beach sand sample 780885 contained substantial quantities of heavy minerals, including cassiterite, it was thought that a further separation of these minerals could be obtained by sizing, as beach sands have been hydraulically classified by the action of the sea.

Object

To examine the distribution of the heavy minerals in the fractions 780885 T/C-N and 780885 T/C-M.

Results

(a) 780885 T/C-N

B.S.S. Mesh	Aperture in Microns	Per Cent Weight	Per Cent Tin	Per Cent Tin Distribution
+ 85	+178	0.6	0.15	0.9
+100	+150	2.1		
+120	+124	10.0		
+150	+105	10.4		
+170	+ 89	59.7	1.62	25.2
+200	+ 75	4.6	16.50	73.9
-200	- 75	12.6		
Total	100.0	3.84	100.0

(b) 780885 T/C-M

<i>E.S.S. Mesh</i>	<i>Aperture in Microns</i>	<i>Per Cent Weight</i>	<i>Remarks</i>
+ 85	+178	1.0	
+100	+150	1.9	
+120	+124	8.0	
+150	+105	19.9	
+170	+ 89	59.3	
+200	+ 75	3.4	} From visual examination, this is all ilmenite
-200	- 75	6.5	
Total	100.0	

From the results of both screenings it can be seen that the majority of the heavy mineral in the sample is less than 105 microns in size. In the table concentrate non-magnetic fraction, 73.9% of the tin present is less than 89 microns in size.

The table tailing was not available for sizing but in view of the close sizing of the heavy minerals and the lower specific gravity of the tailing minerals, screening on 150 mesh before concentration should remove about two-thirds of the weight without significant loss of tin.

By screening on 150 mesh the table concentrate, non-magnetic fraction was upgraded from 3.8% tin to 5.0% tin, with a recovery of 99.1%.

However, screening at this mesh of other than small quantities is not a practical proposition, hence only the screening of the table concentrate need be considered.