TR6-176-178

R. 372 A

MICA, GLADSTONE

TROMMEL TEST

Object of Investigation

To assess the capacity of a one foot diameter trommel to size the greisenized granite, and to determine the percentage of mica in the various sizings.

Trommel

12" diameter, effective screen length 15".
Slope 0.45"/ft.
Mesh 32 mesh aperture 0.2" equivalent to 30 mesh B.S.
Speed 60 r.p.m.

Pulp Preparation

Approximately 300 lbs. dry mica-quartz obtained on the 14th March, 1961. Screened ± 6 mesh. The 6 mesh material included one piece of quartz about 2½" diameter, and several pieces 1"-2" size.

Minus 6 mesh circulated in pump and settled over week-end in drums.

Trommelling

Solids plus water added to pump sump and most of pump delivery by-passed back to sump. Pump delivery rates to trommel varied somewhat, and was regulated by adjustment to valve controlling by-pass. Tendency of pipelines to gradually choke with comparatively coarse quartz. Water spray on last third of trommel (on inside of trommel). Trommel speed rather excessive for wear on screen, but appeared no disadvantage as far as screening was concerned.

Rate of trommel underflow was measured three times during the test.

Rate

Gals./Min.	Lbs. Solids/Min.	Percent Solids in Pulp
3	5.0	15
5	13.8	23
3.8	10.8	24

On observation three gallons/minutes appeared to be below full capacity, and five gallons/minutes appeared to be excessive.

	Lbs.	Percent
Weight of plus 6 mesh material	15	4.9
Trommel Oversize	139	45.4
Trommel Undersize	152	49.7
	306	100.0

Trommel Oversize: Sizing

Mesh	Percent Weight
18	51.9
36	91.2
44	91.5
60	95.3
—60	4.7

To determine the nature of various sizings relative to mica content, a sample of trommel undersize was dispersed and deslimed at 30 micron sizing, and the plus 30 micron fraction amounting to 61.4% of the trommel undersize was submitted to a two cleaner flotation separation to determine the mica content of each sizing. Flotation procedure was similar to that reported in investigation No. R. 372, and the reagents used were a sulphuric acid to produce a pH value of 2.5 to 3 and mica flotation reagents Arquad 12/50 and Aerofroth 73.

Floated mica concentrate	47.9
Rougher and cleaner tailings	52.1

Examination of mica floats and unfloated quartz, &c., shows a high efficiency of separation, and represents a suitable method of evaluation.

The estimated mica content of fractions from plus 36 to plus 300 mesh, and minus 300 mesh plus 30 micron are shown below and for comparison similar fractions of previous sample (R. 372) are also shown.

Fraction	Weight Percent	R.372A Content Mica	R.372 Content Mica
+ 36	7.2	1.2	2.6
+ 44	9.8	8.2	23
+ 52	12.0	19.5	33
+ 60	5.0	40.8	37
+ 72	8.0	43.6	52
+ 85	9.5	57.0	65
+ 100	5.0	57.4	64
+ 120	9.2	65.7	73
+ 150	7.0	72.3	77
+ 200	9.5	70.2	70
+ 300	7.9	72.3	77
— 300 + 30 microns	9.9	75.2	82

Summary

A reasonable loading of the test unit was a pulp volume of 4 g.p.m.

The sizing analyses show the mica contents of each sizing, and show increasing mica contents with decrease in sizing. Plus 36 mesh sizings are virtually free of mica.