

TR 3. 197-200

R. 344, R. 345 & R. 348

JUBILEE COAL COMPANY

SINK-FLOAT BENEFICIATION TESTS.

Investigation.

Two seam samples were obtained from the Company's colliery, and a sample of minus 1½-inch coal was obtained by the Associated Pulp & Paper Mills Ltd., Burnie, from purchased coal. Density separations were made at gravities of 1.4 to 1.8 in 0.1 steps down to minus 30 mesh B.S. size.

Samples.

R.344.—Seam five feet. Top section which is currently mined. Sampled by D. Besford, Inspector of Mines. Sample weight 247 lbs.

R.345.—Total 5 ft. 3 in. Bottom section of seam with 12-inch band at top. The top of the band is the existing floor and the coal is not mined. Sample weight 290 lbs.

R.348.—“Slack” coal supplied by Associated Pulp & Paper Mills Ltd., Burnie. Sample weight 103 lbs.

All sampling was undertaken in accordance with Australian Standards A.S. No. C.K. parts 2 and 3, 1949.

The ash content of the samples on a moisture free basis were:—

R.344	23.5% ash
R.345	25.1% ash
R.348	27.9% ash

R.345 was treated as two samples.

- (a) 82.3% of total sample (coal) containing 22.0% of ash.
- (b) 17.7% of total sample (band) containing 40.0% of ash.

The samples were screened on a 3-inch screen, and oversize was knapped to minus 3-inch size. Quantities plus 3-inch were minor.

Sizing.

Fraction	PERCENT WEIGHT			
	R.344	Coal	R.345 Band	R.348
—3 " + 2 "	25.7	32.7	36.6
—2 " + 1½"	26.6	20.8	22.8	1.9
—1½" + ¾"	21.5	20.7	15.3	40.1
—¾" + ¼"	15.0	15.1	11.9	31.7
—¼"	11.2	10.7	13.4	26.3

Products contained varying quantities of moisture and results expressed in this report are shown on a moisture free basis.

No responsibility is accepted for the results shown in this report except in so far as they apply to the samples tested.

Summary.

1. Sink-float test results are shown in detail in the tables. The following abbreviated table shows the results of beneficiation at a density of 1.6, and includes the small quantities of minus 30 mesh untreated coal which amounted to a maximum of 2.5%.

Floats and Sinks at 1.6 Specific Gravity.

	Coal		Reject	
	Wght.	Percent Ash	Wght.	Percent Ash
R.344. Top section of seam, currently mined	87.7	20.2	12.3	47.5
R.345. Bottom section of seam including 12-inch band	88.9	20.2	11.1	64.7
R.348. Slack Coal	76.6	20.1	23.4	53.3

Coal and Band shown separately.

R.345. Band (to plus $\frac{1}{4}$ ")	9.1	23.1	6.2	66.0
R.345. Coal (to plus $\frac{1}{4}$ ")	70.8	20.0	2.7	61.5

The ash content of the sinks from current production at 1.6 density are somewhat low and show band material containing a minor proportion of coal. The sink products at 1.8 density show but little difference between plus $\frac{1}{4}$ -inch and minus $\frac{1}{4}$ -inch fractions showing that only limited increase in coal yields could be obtained by washing coal crushed to finer sizes. This feature is shown below.

Sink at 1.8	Percent Ash	
	+ $\frac{1}{4}$ inch	- $\frac{1}{4}$ inch
R.344	64.2	61.6
R.348	67.9	66.4

The 1.8 sink from R.345 shows a constant high ash of over 70%.

2. Proximate Analyses and Calorific Values of Coal Floated at a density of 1.6.

Percent	R.344	R.345	R.348
V.C.M.	27.6	31.0	26.9
F.C.	52.2	48.8	53.0
Ash	20.2	20.2	20.1
S	0.38	0.43	0.36
Calorific Value, B.			
Th. Units	11,120	11,290	11,130

Test Results.**R.344.**

Product	Individual Fractions		Cumulative Fractions	
	Wght.	Percent Ash	Wght.	Percent Ash
Float at 1.4, + $\frac{1}{4}$ "	28.7	13.7		
Float at 1.4, - $\frac{1}{4}$ "	2.9	7.5		
Total Float at 1.4	31.6	13.1	31.6	13.1
Float at 1.5, + $\frac{1}{4}$ "	39.5	22.1		
Float at 1.5, - $\frac{1}{4}$ "	1.8	18.2		
Total Float at 1.5	41.3	21.9	72.9	18.1
Float at 1.6, + $\frac{1}{4}$ "	10.8	31.0		
Float at 1.6, - $\frac{1}{4}$ "	1.9	28.2		
Total Float at 1.6	12.7	30.6	85.6	20.0

Product	Individual Fractions Percent		Cumulative Fractions Percent	
	Wght.	Ash	Wght.	Ash
Float at 1.7, + ¼"	4.9	39.6		
Float at 1.7, - ¼"	1.2	37.8		
Total Float at 1.7	6.1	39.3	91.7	21.2
Float at 1.8, + ¼"	3.1	50.2		
Float at 1.8, - ¼"	0.4	46.1		
Total Float at 1.8	3.5	49.7	95.2	22.3
Minus 30 mesh untreated	2.1	29.5	97.3	22.5
Sink at 1.8, + ¼"	1.8	64.2		
Sink at 1.8, - ¼"	0.9	61.6		
Total Sink at 1.8	2.7	63.3	100.0	23.5
Composite	100.0	23.5		

R.345.

Product	Individual Fractions Percent		Cumulative Fractions Percent	
	Wght.	Ash	Wght.	Ash
Float at 1.4, Coal	42.0	15.4		
Float at 1.4, Band	5.4	17.4		
Float at 1.4, - ¼"	4.5	8.4		
Total Float at 1.4	51.9	15.0	51.9	15.0
Float at 1.5, Coal	25.7	25.7		
Float at 1.5, Band	2.7	28.3		
Float at 1.5, - ¼"	1.5	21.3		
Total Float at 1.5	29.9	25.7	81.8	18.9
Float at 1.6, Coal	3.1	35.6		
Float at 1.6, Band	1.0	39.4		
Float at 1.6, - ¼"	0.8	32.3		
Total Float at 1.6	4.9	35.8	86.7	19.9
Float at 1.7, Coal	1.0	44.5		
Float at 1.7, Band	1.4	47.0		
Float at 1.7 - ¼"	0.4	43.9		
Total Float at 1.7	2.8	45.7	89.5	20.7
Float at 1.8, Coal	0.3	52.0		
Float at 1.8, Band	0.5	56.1		
Float at 1.8, - ¼"	0.3	49.6		
Total Float at 1.8	1.1	53.2	90.6	21.1
Minus 30 Mesh untreated	2.2	32.8	92.8	21.4
Sink at 1.8, Coal	1.4	75.7		
Sink at 1.8, Band	4.3	73.3		
Sink at 1.8, - ¼"	1.5	73.7		
Total Sink at 1.8	7.2	73.8	100.0	25.1
Composite	100.0	25.1		

R. 345. Tabulation showing the separate sink-float tests on the coal and band.

Coal 4 ft. 3 ins.

Product	Individual Fractions Percent		Cumulative Fractions Percent	
	Wght.	Ash	Wght.	Ash
Float at 1.4	42.0	15.4	42.0	15.4
Float at 1.5	25.7	25.7	67.7	19.3
Float at 1.6	3.1	35.6	70.8	20.0
Float at 1.7	1.0	44.5	71.8	20.4
Float at 1.8	0.3	52.0	72.1	20.5
— $\frac{1}{4}$ " untreated	8.8	25.8	80.9	21.1
Sink at 1.8	1.4	75.7	82.3	22.0
Composite	82.3	22.0		

Band 12 ins.

Float at 1.4	5.4	17.4	5.4	17.4
Float at 1.5	2.7	28.3	8.1	21.0
Float at 1.6	1.0	39.4	9.1	23.1
Float at 1.7	1.4	47.0	10.5	26.3
Float at 1.8	0.5	56.1	11.0	27.6
— $\frac{1}{4}$ " untreated	2.4	36.8	13.4	29.3
Sink at 1.8	4.3	73.3	17.7	40.0
Composite	17.7	40.0		
Composite of coal plus band	100.0	25.2		

R.348.

Float at 1.4, + $\frac{1}{4}$ "	23.5	12.3		
Float at 1.4, — $\frac{1}{4}$ "	7.8	8.2		
Total Float at 1.4	31.3	11.3	31.3	11.3
Float at 1.5, + $\frac{1}{4}$ "	19.8	23.3		
Float at 1.5, — $\frac{1}{4}$ "	4.8	20.4		
Total Float at 1.5	24.6	22.7	55.9	16.3
Float at 1.6, + $\frac{1}{4}$ "	14.9	30.9		
Float at 1.6, — $\frac{1}{4}$ "	3.3	30.2		
Total Float at 1.6	18.2	30.8	74.1	19.9
Float at 1.7, + $\frac{1}{4}$ "	7.3	40.0		
Float at 1.7, — $\frac{1}{4}$ "	1.8	38.3		
Total Float at 1.7	9.1	39.7	83.2	22.0
Float at 1.8, + $\frac{1}{4}$ "	2.9	48.5		
Float at 1.8, — $\frac{1}{4}$ "	0.9	46.0		
Total Float at 1.8	3.8	47.9	87.0	23.2
Minus 30 Mesh untreated	2.5	28.5	89.5	23.3
Sink at 1.8, + $\frac{1}{4}$ "	5.3	67.9		
Sink at 1.8, — $\frac{1}{4}$ "	5.2	66.4		
Total Sink at 1.8	10.5	67.2	100.0	27.9
Composite	100.0	27.9		