

TR3-193-196

R. 342 & R. 343

STANHOPE COAL CO.

SINK-FLOAT BENEFICIATION TESTS.

Investigation.

Two seam samples were obtained from the Company's colliery for use in sink-float tests after crushing to minus three inch size. Density separations have been made from Sp.G. of 1.4 to 1.8 in 0.1 steps down to minus 30 mesh B.S.

R.342 was taken from No. 4 drive left of main heading and consisted of:

Top seam 2 ft. 11 in. including 1 in. of band, and
Bottom seam 4 ft. 8 in. with band at top 3½ in. and 1 in. band
at 1 ft. 3 in. ;
Sample weight 577 lbs.

R.343 was taken from first cut between first and second roads to the right of main heading.

Top seam 2 ft. 9 in. (sample weight 178 lbs.), and
Bottom seam 4 ft. 3 in. (sample weight 340 lbs.) including
top band 1½ in. and ¾ in. band at 1 ft. 2½ in.

Sampling was undertaken in accordance with Australian Standards A.S. No. CK parts 2 and 3, 1949.

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

R.342	22.6% ash
R.343	22.7% ash

SIZING.

Fraction	R.342		R.343	
	Percent	Top Percent	Bottom Percent	Bottom Percent
—3 " + 2 "	15.5	24.4	20.4	
—2 " + 1¼"	21.4	20.8	23.2	
—1½" + ¼"	24.7	23.1	23.6	
—¾" + ¼"	22.4	18.7	18.1	
—¼"	16.0	13.0	14.7	

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

The various fractions contained from 2% to 5% of moisture, but the ash percentages shown in this report are on a moisture free basis.

Summary.

1. The two seam samples taken some hundreds of feet apart contain approximately the same quantity of ash (22.6 and 22.7%).

2. The samples, after crushing to minus three inch mesh size, were submitted to sink-float tests. The minus 30 mesh B.S. fractions were untreated. The samples were treated at densities of 1.4 to 1.8 in 0.1 steps, and the detailed results are shown in the tabulations. The following abbreviated table shows the results of beneficiation at densities of 1.6 and 1.8.

Product	R.342 Percent		R.343 Percent	
	Wght.	Ash	Wght.	Ash
Float at 1.6	79.5	12.9	82.2	13.2
Float at 1.8	82.6	14.2	84.5	14.1
Untreated minus 30 mesh	3.9	24.8	2.7	32.3
Sink at 1.8	13.5	73.4	12.8	77.7

In the case of R.343 the top and bottom sections of the sample were treated separately, and the results are shown in the tabulations. Minus ¼-inch plus 30 mesh fractions were treated separately and the results of these treatments are shown.

R.342. *Total Seam 7 ft. 7 ins.*

Heavy solution separation of minus 3 inch by 30 mesh.

Product	Individual Fractions		Cumulative Fractions	
	Percent		Percent	
	Wght.	Ash	Wght.	Ash
Float at 1.4	60.3	9.5	60.3	9.5
Float at 1.5	14.5	20.5	74.8	11.6
Float at 1.6	4.7	33.4	79.5	12.9
Float at 1.7	1.3	42.6	80.8	13.4
Float at 1.8	1.8	50.8	82.6	14.2
Minus 30 mesh untreated	3.9	24.8	86.5	14.7
Sink at 1.8	13.5	73.4	100.0	22.6
Composite	100.0	22.6		

R.343. *Top section of seam 2 ft. 9 ins. without bands.*

Float at 1.4	27.0	9.0	27.0	9.0
Float at 1.5	4.9	19.3	31.9	10.6
Float at 1.6	0.9	31.1	32.8	11.2
Float at 1.7	0.2	41.0	33.0	11.3
Float at 1.8	0.2	46.5	33.2	11.6
Minus 30 mesh untreated	0.8	28.7	34.0	12.0
Sink at 1.8	0.3	72.3	34.3	12.5
Composite	34.3	12.5		

R.343. *Bottom section of seam 4 ft. 3 ins. including 2½-inch of band.*

Float at 1.4	35.5	11.4	35.5	11.4
Float at 1.5	10.5	20.0	46.0	13.4
Float at 1.6	3.4	31.4	49.4	14.6
Float at 1.7	0.9	42.8	50.3	15.1
Float at 1.8	1.0	51.1	51.3	15.8
Minus 30 mesh untreated	1.9	33.8	53.2	16.5
Sink at 1.8	12.5	77.9	65.7	28.1
Composite	65.7	28.1		

R.343. *Total seam seven feet (Composite of top and bottom sections).*

Float at 1.4	62.5	10.4	62.5	10.4
Float at 1.5	15.4	19.8	77.9	12.2
Float at 1.6	4.3	31.4	82.2	13.2
Float at 1.7	1.1	42.5	83.3	13.6
Float at 1.8	1.2	50.3	84.5	14.1
Minus 30 mesh untreated	2.7	32.3	87.2	14.7
Sink at 1.8	12.8	77.7	100.0	22.8
Composite	100.0	22.8		

The seam samples were floated in two sizings, minus 3 inch plus ¾-inch and minus ¼-inch plus 30 mesh B.S. size, and the individual results are available if required.

The results of treatment of minus $\frac{1}{4}$ -inch coal are shown below.

R.342. Minus one-quarter inch, 16% by weight.

Product	Percent	
	Wght.	Ash
Float at 1.4	9.1	7.0
Float at 1.5	1.0	20.7
Float at 1.6	0.5	33.0
Float at 1.7	0.2	43.3
Float at 1.8	0.1	49.5
Minus 30 mesh untreated	3.9	24.8
Sink at 1.8	1.2	73.7
Composite minus $\frac{1}{4}$ -inch coal	16.0	18.7

R.343.

Product	Minus $\frac{1}{4}$ " Top Section Percent		Minus $\frac{1}{4}$ " Bottom Section Percent	
	Wght.	Ash	Wght.	Ash
Float at 1.4	3.2	6.8	4.9	8.2
Float at 1.5	0.2	20.3	0.8	20.5
Float at 1.6	0.1	32.6	0.3	32.0
Float at 1.7			0.2	42.5
Float at 1.8	0.1	44.5	0.1	49.6
Minus 30 mesh untreated	0.8	28.7	1.9	33.8
Sink at 1.8	0.1	73.0	1.5	79.7
Composite minus $\frac{1}{4}$ -inch coal	4.5	14.2	9.7	27.2
Total minus $\frac{1}{4}$ -inch coal (Top plus Bottom)	14.2	23.1		

R. 342 & R. 343

APPENDIX I.

Composites of fractions floating at 1.6 and 1.8 to +30 mesh B.S. size plus -30 mesh untreated coal have been submitted to proximate analyses and determinations of calorific value with the following results.

Results shown are on a moisture free basis.

	R.342		R.343	
	Float at 1.6	Float at 1.8	Float at 1.6	Float at 1.8
Percent Weight	83.4	86.5	84.9	87.2
Percent Ash	13.5	14.7	14.0	14.9
Percent V.C.M.	32.8	32.7	32.1	31.6
Percent F.C.	53.7	52.6	53.9	53.5
Percent Sulphur	0.52	0.49	0.42	0.36
Calorific Value B.Th.U's.	12,770	12,540	12,720	12,530