

WU18113

FUEL RESEARCH INSTITUTE OF SOUTH AFRICA.

TECHNICAL MEMORANDUM NO. 20 OF 1962.

A REPORT ON THE RESULTS OBTAINED FROM WASHING
KOORNFontein PEAS IN THE DREWBOY WASHER.

BY:

S.F. STREICHER.

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KOORNFONTEIN PEAS IN THE DREWBOY WASHER.

INTRODUCTION:

This work was done at the request of the Assistant Consulting Development Engineer, Anglo American Corporation.

About 300 tons of Koorfontein pre-washed peas were screened and the $+\frac{3}{8}$ " material was washed in the Drewboy washer at s.g. 1.375.

THE COAL:

Nine truck loads of Koorfontein peas were despatched to the Fuel Research Institute's pilot plant and arrived on the 4th. October, 1962.

THE TEST:

The coal was washed in the pilot plant on the 8th, 9th and 10th of October. As requested the treatment was exactly the same as for Springbok peas described in Technical Memorandum No. 12 of 1962, except that no test was done on $\frac{1}{8}$ " undersize material.

TREATMENT OF SAMPLES:

Samples taken were analysed in the same way as described in Technical Memorandum No. 12, but no ash determinations were carried out on separate specific gravity fractions.

The screen analysis of the raw coal sample is reported in Table 1, and the float and sink analyses of the raw coal, washed coal and discard samples are reported in Table 2.

Results obtained from the chemical analysis of samples of washery products are reported in Table 3.

WEIGHT .../

WEIGHT BALANCE.

A. <u>Raw Coal</u> (S.A.R. weights)	323 tons.
corrected for moisture content of sample	314.7 tons.
B. <u>Products leaving the plant</u> (air-dry weights)	
(i) Washery discard	118.7 tons.
(ii) $-\frac{3}{8}$ " material screened out	23.1 "
(iii) $-\frac{1}{4}$ " from pre-wet screen	13.2 "
(iv) Slurry	2.9 "
(v) Washed coal (by difference)	<u>156.8 "</u>
TOTAL:	<u>314.7 "</u>

Weights of washed coal received as reported by Highveld were:

<u>Truck No.</u>	<u>Weight (lb.)</u>
152835	69900
126151	70320
136816	65140
118447	70720
118167	<u>41720</u>
TOTAL:	<u>317800</u> i.e. 158.9 tons.

If allowance is made for 1 - 2% moisture in the coal when weighed, this figure corresponds with the indirect determination derived from the weight balance.

YIELD OF WASHED COAL:

Using the three different methods described in the report on the Springbok test, the following values are arrived at:-

(i) Weight balance	56.9 %
(ii) Ash balance	57.4 %
(iii) From float and sink analysis of products	56.8 %

For evaluation of results the yield figure obtained from the weight balance was used.

A summary of plant performance data are given in Table 4.

(SIGNED) S. F. STREICHER.
TECHNICAL OFFICER.

PRETORIA:
8/11/62.

TABLE 3.
ANALYSIS OF WASHED PRODUCT AND DISCARD.
(air-dry basis).

	PRODUCT	DISCARD
Moisture %	2.9	2.3
Ash %	7.7	17.8
Volatile Matter %	31.7	26.5
Fixed Carbon %	51.7	53.4
Sulphur %	0.68	1.38
Phosphorus %	0.186	0.165
Swelling Number	1½ - 2	1

TABLE 4.
PLANT PERFORMANCE DATA.

Raw Coal Ash %	12.0
Washed Coal Ash %	7.7
Discard Ash %	17.8
Yield % (i) Weight Balance	56.9
(ii) Ash Balance	57.4
(iii) I. S. O.	56.8
Cut Point	1.377
Misplaced Material %	6.7
Probable Error	0.016
Near Gravity Material %) (±0.1 S.G.)	85.5