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FUEL RESEARCH INSTITUTE OF SOUTH AFRICA

TECHNICAL MEMORANDUM NO. 37 OF 1963

A REPORT ON THE RESULTS OBTAINED FROM
WASHABILITY DETERMINATIONS CARRIED OUT ON
A SAMPLE OF NATAL ANTHRACITE DUFF

by
S.F. STREICHER

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INTRODUCTION

The Fuel Research Institute was requested by the Manager, Natal Anthracite Colliery, to carry out washability determinations on a sample of 5 mm x 0 fines. The sample was taken by colliery officials and forwarded by rail to the laboratories of the Fuel Research Institute in Pretoria, where it was analysed.

ANALYSIS OF SAMPLE

Upon arrival in Pretoria the sample was air-dried and then subjected to a screen analysis at the following apertures: 5 mm, 1.6 mm (1/16"), and 0.5 mm.

A screen analysis at 2 mm was called for originally; however, since such a screen was not available, a 1/16" screen was substituted instead. Results of this screen analysis are reported in Table 1.

The 5 mm x 1.6 mm and 1.6 mm x 0.5 mm size fractions arising from the screen analysis were then subjected to detailed float and sink analyses on a fractional basis at 0.05 intervals in the specific gravity range 1.35 to 1.65.

Ash determinations were carried out on all specific gravity fractions and cumulative values were calculated. Zinc chloride solutions, made up to the required specific gravities, were used for the analysis of these size fractions.

For the -0.5 mm size fraction, the analysis was done on a cumulative basis in carbon tetrachloride and a centrifuge. Ash determinations were carried out on the float fractions at all the different specific gravities and on the sink fraction at s.g. 1.65.

Results/...

Results of these analyses are reported in Table 2.

Washability curves were drawn for the different size fractions as shown in Figures 1 to 3.

S.F. STREICHER
Senior Technical Officer.

PRETORIA

24th October, 1963.

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TABLE 1

SCREEN ANALYSIS OF SAMPLE

Size	Yield		
	Fract. lb	Fract. %	Cum. %
+5 mm	1.0	0.72	0.72
-5 mm + 1.6 mm	48.5	34.70	35.42
-1.6 mm + 0.5 mm	55.0	39.36	74.78
-0.5 mm	34.0	24.33	99.11
Loss	1.25	0.89	
Total	139.75	100.00	100.00

TABLE 2

FLOAT AND SINK ANALYSIS OF SIZE FRACTIONS

	5 mm x 1.6 mm Size Fraction				1.6 mm x 0.5 mm Size Fraction				-0.5 mm Size Fraction	
	Fract. Yield %	Cum. Yield %	Fract. Ash %	Cum. Ash %	Fract. Yield %	Cum. Yield %	Fract. Ash %	Cum. Ash %	Cum. Yield %	Cum. Ash %
F 1.35	29.35	29.35	3.0	3.0	21.33	21.33	2.7	2.7	4.16	2.2
1.35 - 1.40	43.41	72.76	6.1	4.85	33.36	54.69	4.9	4.04	38.29	3.4
1.40 - 1.45	15.71	88.47	11.6	5.97	20.17	74.86	8.5	5.24	74.18	4.7
1.45 - 1.50	4.13	92.60	18.6	6.53	7.76	82.62	11.6	5.84	80.95	5.6
1.50 - 1.55	2.05	94.65	23.9	6.91	4.58	87.20	14.0	6.27	84.59	6.2
1.55 - 1.60	1.43	96.08	28.0	7.22	5.00	92.20	20.4	7.04	86.99	6.7
1.60 - 1.65	0.93	97.01	33.7	7.47	2.91	95.11	24.8	7.59	88.70	7.1
S 1.65	2.99		51.9		4.89		40.7			55.7
Whole Coal	100.00	100.00		8.80	100.00	100.00		9.21	100.00	12.59





