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FUEL RESEARCH INSTITUTE OF SOUTH AFRICA

TECHNICAL MEMORANDUM NO. 22/1958

JOINT ISCOR - SASOL - F.R.I. RESEARCH PROJECT

INVESTIGATION ON WITBANK NO. 2-SEAM DUFF

FIRST PROGRESS REPORT

Period: August-October 1958

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INVESTIGATION ON WITBANK NO.2-SEAM DUFF.

FIRST PROGRESS REPORT.

Period: August-October 1958.

- COVERS: I. Washing Data on :-
- (a) Douglas Baum washed duff.
 - (b) Raw duff from Transvaal Navigation Colliery.
- II. Analytical and other data on blend constituents and coke from blends containing Douglas swelling coal.

SECTION I.

WASHING RESULTS OF 5 BATCHES OF WITBANK NO. 2 SEAM
DUFF COALS WASHED IN THE CYCLONE WASHER IN THE
COAL PREPARATION PILOT PLANT FOR COKING TESTS AT
ISCOR.*

BATCH I. DATE WASHED: 28th. and 29th. August, 1958.

ORIGIN: Baum Washed Duff coal from Douglas Colliery.
Per cent of minus 30 mesh material in feed
to washery: 29.6 (From sample taken at
colliery over 1 shift).

S.G. of SEPARATION (+30 mesh material): 1.375

ESTIMATED YIELD OF WASHED COAL%: 50

PROBABLE ERROR OF SEPARATION: 0.018

<u>ANALYSIS OF PRODUCTS:</u>	<u>Ash %</u>	<u>H₂O %</u>	<u>Vol. Matter %</u>	<u>Sw. No.</u>
Washed Coal	5.9	2.3	31.7	3
Middlings **	15.2	-	-	-

ESTIMATED TONNAGE OF WASHED COAL
DESPATCHED TO ISCOR: 70

BATCH II. DATE WASHED: 18th. September, 1958.

ORIGIN: Baum Washed Duff coal from Douglas Colliery.
Per cent of minus 30 mesh material in feed
to washery: 29.6

S.G. OF SEPARATION (+30 mesh fraction): 1.372

ESTIMATED YIELD OF WASHED COAL %: 50

PROBABLE ERROR OF SEPARATION: 0.019

<u>ANALYSIS OF PRODUCTS:</u>	<u>Ash %</u>	<u>H₂O %</u>	<u>Vol. Matter %</u>	<u>Sw. No.</u>
Washed Coal	5.3	2.1	32.5	3
Middlings	15.0	-	-	-

ESTIMATED TONNAGE OF WASHED COAL
DESPATCHED TO ISCOR: 40

BATCH III. .../

* Only +30 mesh material was washed and despatched to Iscor.

** Since a washed duff was procured from the Colliery in this case, the discard from the washer is designated "Middlings". In later tests where an unwashed duff was treated (see T.N.C.) the discard is termed "Refuse".

BATCH III. DATE WASHED: 19th. September, 1958.

ORIGIN: Baum Washed Duff coal from Douglas Colliery.
Per cent of - 30 mesh material in feed to
washery: 29.6

S.G. OF SEPARATION (+30 mesh fraction): 1.411

YIELD OF WASHED COAL % (determined): 61.8

PROBABLE ERROR OF SEPARATION: 0.021

<u>ANALYSIS OF PRODUCTS:</u>	<u>Ash %</u>	<u>H₂O %</u>	<u>Vol. Matter %</u>	<u>Sw. No.</u>
Washed Coal	6.4	2.0	30.7	2
Middlings	16.6	1.9	23.5	-

ESTIMATED TONNAGE OF WASHED COAL
DESPATCHED TO ISCOR: 79

BATCH IV. DATE WASHED: 6th. and 7th. October, 1958.

ORIGIN: Raw Duff coal from Transvaal Navigation
Colliery.
Per cent -30 mesh material in feed to washery:
20.3 (From sample taken at Coll.)

S.G. OF SEPARATION (+30 mesh material): 1.365

ESTIMATED YIELD OF WASHED COAL %: 45

PROBABLE ERROR OF SEPARATION: 0.019

<u>ANALYSIS OF PRODUCTS:</u>	<u>Ash %</u>	<u>H₂O %</u>	<u>Vol. Matter %</u>	<u>Sw. No.</u>
Washed Coal:	6.7	2.4	35.6	3
Refuse:	23.4	2.1	25.7	-

ESTIMATED TONNAGE OF WASHED COAL
DESPATCHED TO ISCOR: 93

BATCH V. DATE WASHED: 15th. and 16th. October, 1958.

ORIGIN: Raw Duff coal from Transvaal Navigation Colliery.
Per cent -30 mesh material in feed to washery:
20.3

S.G. OF SEPARATION (+ 30 mesh fraction): 1.414.

PROBABLE ERROR OF SEPARATION: 0.022

ESTIMATED YIELD OF WASHED COAL %: 60

<u>ANALYSIS OF PRODUCTS:</u>	<u>Ash %</u>	<u>H₂O %</u>	<u>Vol. Matter %</u>	<u>Sw. No.</u>	<u>C.V.</u>
Washed coal:	7.5	2.8	33.1	2	-
Refuse:	27.4	1.6	26.0	-	10.2

ESTIMATED TONNAGE OF WASHED COAL DESPATCHED TO ISCOR: 108

SECTION IINOTES ON TABULATED RESULTS (SHEET I.)
OF TESTS ON WITBANK WASHED DUFF AS BLEND COKING COAL.

1. The tests are divided into groups for Blesbok 70%, Springbok 70%, Master Blend, Douglas Duff Series 1 and Douglas Duff Series 2.

The Douglas Series 1 tests are blends with different proportions of Douglas duff washed to a relatively low yield and "high" swelling number, and the Douglas Series 2 tests are blends with Douglas duff washed to a higher yield and lower swelling number.

2. The numbers allocated to the tests are in numerical order according to the date on which the test blends were charged to the coke oven. A space has been left below this for Iscor to insert their own test numbers if the identification given is not considered adequate by Iscor.

3. The components of the various blends are identified by the following letters:-

- N - Natal coal (mixture of D.N.C. and Northfield).
- B - Blesbok coal.
- CE - Coal Estates (Navigation) coal.
- S - Springbok No. 5-Seam coal.
- D - Douglas duff rewashed in cyclone washer.

In the same line the percentage of the component in the blend is given and the ash content and swelling number of the component are given in the two following lines.

4. The total moisture contents of the blends were determined on a special moisture sample, and the screen and proximate analyses on the normal analytical samples.
5. The ash content of the coke was only determined on selected coke samples, and is reported on the air-dry basis. The ratio: coke ash to coal ash (both air dry) on the samples so far available varies from 1.40 to 1.47 with a mean value of 1.43, so that using this factor one could obtain a reasonable approximation of the coke ash
for .../

for those samples where the ash content was not determined.

The mean size of the coke is obtained by adding the products of the percentages and mean sizes of the various size fractions and dividing by 100.

The shatter size stability (SSS) is the ratio of the mean size of the coke after the shatter test to the mean size (of the +2" coke used) before the shatter test, multiplied by 100.

The abrasion size stability (ASS) is the ratio of the mean size of the coke after the abrasion test to the mean size of the coke charged to the abrasion drum (taken as 2.5 inches), multiplied by 100.

The resistance to shatter and abrasion (RSA) is the product of the shatter and abrasion size stabilities divided by 100.

6. In Test 11 - the first test with nominal 20% of Douglas, Series 2, washed coal in the blend - the automatic control of the feeder for the Douglas coal was not operating properly and the calculated percentage (17.3) of Douglas duff in the blend cannot be regarded as correct. It is considered that the actual percentage of Douglas duff in the blend is likely to be somewhat lower than the figure given. This would affect the quantities of the other components in the blend, but the relative proportions of Natal and Blesbok coal should be correct.
7. The Douglas duff in Tests 12 and 13 - Douglas Series 2 with 30% duff, and the repeat test on 20% duff - appears to have been contaminated with some other coal. The identity of the contaminating coal could not be established. The results of the tests have, nevertheless, been included in the table.
8. Some of the values in the table have been reported to a higher degree of accuracy than is normally significant. The reason for this is that one object of these tests is to make comparisons between the results of individual tests in the series.

9. Proximate analyses were done on the Natal component of all 16 blends, on two samples of the Blesbok component, and on one sample each of Coal Estates (Navigation) and Springbok No. 5 coal. The average results were as follows:-

<u>Coal</u>	<u>Test No.</u>	<u>H₂O %</u>	<u>Ash%</u>	<u>V.M.%</u>	<u>F.C.%</u>
Blesbok	1 and 16	2.7	11.0	32.9	53.4
Springbok	1	2.1	11.0	34.4	52.5
Coal Estates	1	2.0	13.0	30.8	54.2
Natal	1 to 16	1.2	11.5	30.5	56.8

Maximum and minimum values for the Natal coal samples were:-

Maximum	1.5	11.9	31.1	57.5
Minimum	1.0	10.9	30.1	56.2

(SIGNED) B. van Eck
Technical Officer.
 &
W.H.D. Savage.
Assistant Director.

PRETORIA.
 3rd. November, 1958.

SHEETS 1 AND 2. /

ISCOR COKE-OVEN TESTS ON BLENDS CONTAINING WASHED WITBANK DUFF COAL. (SHEET 1)

Description	Master Blend		Douglas Duff Series 1.					Douglas Duff Series 2.					Blesbok		Springbok	
	1	15	5%	10%	20%	30%	70%	5%	10%	20%	30%	70%	6	16	70%	7
Test No.	N 30	N 30.8	N 30.2	N 33.7	N 30.7	N 29.8	N 30.3	N 30.2	N 31.5	N 30.2	N 30.6	N 32.1	N 30.2	N 30.5	N 30.1	N 30.1
IsCOR Test No.	11.5	11.3	11.6	11.9	11.6	11.3	11.0	11.4	11.5	11.5	11.7	11.5	11.5	11.6	10.9	10.9
Date Charged	6	6 $\frac{1}{4}$	6	7 $\frac{1}{4}$	6 $\frac{1}{4}$	6 $\frac{1}{4}$	6	6 $\frac{1}{4}$	6	6	6	6	6 $\frac{1}{4}$	6 $\frac{1}{4}$	6 $\frac{1}{4}$	6 $\frac{1}{4}$
Component; %	B 30	B 29.6	B 64.7	B 57.9	B 49.5	B 40.5	B 10.9	B 64.7	B 51.2	B 49.9	B 39.8	B 11.5	B 69.8	B 69.5	B 10.9	B 10.9
Ash %	11.1	10.9	10.9	10.8	10.8	10.9	10.9	10.8	10.9	10.9	10.9	10.9	10.8	10.9	10.9	10.9
Swelling No.	S 17	S 16.5	D 2 $\frac{1}{2}$	D 2 $\frac{3}{4}$	D 3	D 2 $\frac{1}{2}$	D 69.7	D 5.1	D 17.3	D 19.9	D 29.6	D 67.9	D 2	D 2 $\frac{1}{4}$	S 69.9	S 69.9
Component; %	11.0	11.1	5.1	8.6	6.0	6.7	5.9	6.4	6.5	6.6	6.8	7.2	7.2	7.2	10.6	10.6
Ash %	3 $\frac{1}{2}$	3 $\frac{1}{2}$	6.2	7.0	4	3	3	3	1 $\frac{1}{2}$	2	2	2	2	4	4	4
Swelling No.	CE 23	CE 23.1	3	3 $\frac{1}{2}$	4	3	3	2	1 $\frac{1}{2}$	2	2	2	2	4 $\frac{1}{4}$	4	4
Component; %	13.0	12.9	5.8	5.9	5.4	5.9	6.5	8.7	8.9	8.2	7.6	6.3	7.4	8.7	8.1	8.1
Ash %	3 $\frac{1}{2}$	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	5	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	4	3 $\frac{3}{4}$	4 $\frac{1}{4}$	3 $\frac{1}{2}$	5	5
Swelling No.	5.6	7.9	19.4	27.4	28.2	22.8	22.4	24.6	27.7	22.9	24.6	15.6	15.6	33.3	19.7	19.7
Total H ₂ O %	20.8	36.0	36.0	37.5	34.3	40.8	42.5	35.0	39.1	33.7	34.5	39.3	35.4	32.5	36.9	36.9
Screening %	26.7	34.4	34.5	28.4	30.2	30.5	29.9	35.9	29.9	36.2	37.9	39.6	43.5	31.9	35.8	35.8
+ 8"	9.9	5.9	10.1	6.7	7.3	6.5	5.2	4.5	3.3	7.2	3.0	5.5	5.5	2.3	7.6	7.6
+ 10"	1.8	1.8	2.4	2.3	2.2	2.2	2.1	1.8	1.9	1.7	1.9	1.8	2.6	2.2	2.1	2.1
Air-dry Coal	11.8	11.6	10.8	10.8	10.1	10.0	7.5	10.7	10.6	10.5	10.4	8.5	11.1	11.0	10.8	10.8
H ₂ O %	31.9	31.5	31.4	31.5	31.6	31.6	31.5	32.0	31.8	31.6	31.6	31.0	31.2	31.4	32.5	32.5
Ash %	54.5	55.1	55.4	55.4	56.1	56.2	58.9	55.5	55.7	56.2	56.1	58.7	55.1	55.4	54.6	54.6
V.M. %	4	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	5	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	4	3 $\frac{3}{4}$	4 $\frac{1}{4}$	3 $\frac{1}{2}$	5	5
F.C. %																
Swelling No.	1271	1330	1301	1338	1326	1297	?	1317	1308	1315	1314	1320	1335	1281	1292	1292
Coking Temp. °C	16 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	18	18 $\frac{1}{2}$	18 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	18 $\frac{1}{2}$	16 $\frac{1}{2}$	18 $\frac{1}{2}$	18 $\frac{1}{2}$
Coking Time	30.8	29.1	29.6	29.8	29.9	29.9	28.9	28.4	29.6	29.4	29.8	30.9	29.6	29.8	30.1	30.1
Bulk Density	16.5	16.3	16.6	16.8	16.9	16.9	11.0	16.4	16.6	16.4	16.4	16.6	16.1	15.7	15.7	15.7
Ash % (Air-dry)	10.5	6.6	8.7	5.8	4.8	1.6	2.4	10.2	6.8	15.3	8.4	7.4	6.7	9.3	7.9	7.9
Screening %	+ 5"	33.0	31.4	22.5	23.8	22.5	21.7	27.0	32.9	42.2	36.5	22.4	29.7	32.5	33.3	33.3
+ 4"	37.7	68.9	62.1	56.4	61.4	60.2	54.8	62.4	65.6	70.6	68.7	56.7	62.1	62.9	64.8	64.8
+ 3"	68.0	80.8	74.7	73.0	76.0	74.5	73.0	78.1	78.5	82.8	82.0	70.8	78.6	77.2	82.4	82.4
+ 2 $\frac{1}{2}$ "	81.0	89.8	85.4	84.0	86.8	84.8	84.4	87.7	89.1	91.3	90.3	82.6	88.6	86.5	91.4	91.4
+ 2"	90.8	95.2	92.0	91.1	92.1	92.1	93.3	94.6	93.1	95.5	94.4	92.0	94.6	93.0	95.8	95.8
+ 1 $\frac{1}{2}$ "	94.8	97.5	95.4	95.2	96.5	94.7	96.9	96.4	95.8	97.4	96.7	96.8	96.6	96.0	97.5	97.5
+ 1"	96.6	98.1	96.6	96.5	97.4	95.8	97.9	97.3	96.9	98.3	97.5	97.8	97.3	97.2	98.2	98.2
+ 1 $\frac{1}{2}$ "	97.4	98.1	96.6	96.5	97.4	95.8	97.9	97.3	96.9	98.3	97.5	97.8	97.3	97.2	98.2	98.2
Mean Size In.	3.55	3.47	3.34	3.16	3.24	3.15	3.13	3.36	3.41	3.68	3.52	3.18	3.36	3.39	3.48	3.48
Shatter Test	75.3	75.0	76.8	75.3	76.7	75.0	69.6	74.2	74.2	75.9	76.1	68.1	75.7	77.0	77.7	77.7
+ 2"	89.9	88.6	88.4	87.8	88.6	88.1	86.9	87.7	87.4	88.7	89.2	85.7	89.2	87.3	89.3	89.3
+ 1 $\frac{1}{2}$ "	94.8	94.9	93.6	94.5	94.3	94.3	94.6	93.8	93.8	95.1	94.6	94.8	94.4	93.3	95.4	95.4
+ 1"	96.4	96.9	95.8	96.3	96.5	96.3	97.1	95.9	96.2	96.8	96.8	96.6	96.3	95.8	97.4	97.4
Cochrane Index	72.6	73.2	68.4	70.5	70.6	69.8	72.3	67.9	67.7	70.9	69.1	70.5	70.4	67.5	73.6	73.6
S S S	73.5	74.5	73.6	75.8	74.4	75.3	71.4	71.2	70.1	71.4	72.5	68.2	72.5	73.0	73.8	73.8
A S S	52.4	50.9	48.1	49.3	49.6	47.9	48.3	45.4	47.2	48.8	47.1	46.9	47.9	45.0	50.7	50.7
R S A	38.5	37.9	35.4	37.4	36.9	36.1	34.5	32.3	33.1	34.8	34.1	32.0	34.7	32.9	37.4	37.4

DESCRIPTION

Test No.	1	15	2	3
Composition of Coal.	30% D.N.C. 30% Blesbok 17% Springbok 23% S.A.C.E.	30% Natal 30% Blesbok 17% Springbok 23% S.A.C.E.	30% Natal 65% Blesbok 5% Douglas Duff	30% Na 60% Bl 10% Do
Date Charged	26/8/58	6/10/58	29/8/58	3/9/58
Coking Time (hrs.)	16½	16½	16½	16
Oven No. and Temp. °C.	62, 52, 42 1271°C.	36, 26, 16 1330°C	3, 76, 66 1301°C.	15, 5 13
Colour	Grey to silvery with dark patches.	Grey.	Dark grey.	Dark grey.
Shape	Blocky.	Blocky irregular with a large amount of prismatic pieces.	Blocky.	Blocky.
Longitudinal Fissures.	Large amount.	Large amount Less than cokes ex Duff test series.	Large amount.	Large amount.
Transverse Fissures.	Large amount.	Large amount less than cokes ex Duff test series.	Large amount.	Large amount.
Cell Structure	Good.	Fairly good to good.	Variating and not good due to rough appearance of coke.	Fair, better than Test 2 still acceptable.
Spongy Ends.	Normal amount.	Normal amount.	Normal amount.	Normal amount.
Cauliflower Ends.	Well developed.	Well to over-developed inclined to break off.	Well developed inclined to break off.	Well to developed inclined to break off.
Fing.	Good.	Fairly good to good.	Fair.	Fair to good.
Lebbly Material	Large amount	Large amount	Large amount	Large amount
Remarks.	Has better appearance than normal Iscor coke. Probably good met. coke.	Probably a good met. coke. Duplicate of Test 1.	Very rough appearance probably not met. coke.	Coke has better appearance than Test 2 probably met. coke.

	4	5	8	9
tal esbok uglas Duff	30% D.N.C. 50% Blesbok 20% Douglas Duff	30% D.N.C. 40% Blesbok 30% Douglas Duff	70% Douglas Duff 30% Natal	5 % Douglas Duff 30% Natal 65% Blesbok
58	4/9/58	9/9/58	15/9/58	18/9/58
1/2	18	18 1/2	18 1/2	16 1/2
, 78 38°C	51, 41, 31 1326°C	38, 28, 18 1297°C.	- -	11, 74, 64 1317°C
ey to	Dark grey to grey.	Dark grey to grey.	Dark grey to grey.	Dark grey to grey.
	Blocky in- cluding a few prismatic pieces.	Blocky.	Blocky.	Blocky, some prismatic pieces ob- served.
mount.	Large amount.	Large amount.	Large amount.	Large amount.
amount.	Large amount.	Large amount.	Large amount.	Large amount.
but than , but vari-	Fair to good but variable	Fair to good but variable	Fair.	Fair to fairly good.
	Normal amount.	Normal amount.	Normal amount.	Normal amount.
o over ped in- to off.	Well to over devel- oped.	Well to over developed inclined to break off	Well to over- developed and breaking; off.	Well to over developed, in- clined to break off.
good.	Fair to good but variable	Good.	Fairly good.	Fairly good.
amount	Large amount	Large amount	Large amount	Large amount
as appear- man . Prob- t.coke.	Coke seems to be better than Test 3. Prob- ably met. coke. Prismatic pieces; breaks into small pieces.	Coke has rougher ap- pearance than Test 4: Prob- ably good met. coke.	Coke has a rough appear- ance and is of smaller size. Probably not met.coke.	Coke has a rough appear- ance. Some lumps are highly abra- dable. Prob- ably a met.coke.

DESCRIPTION OF

Test No.	10	11	13	12
Composition of) Coal)	10% Douglas Duff 30% D.N.C. 60% Blesbok	30% Natal 50% Blesbok 20% Douglas Duff	30% Natal 50% Blesbok 20% Douglas Duff	30% Natal 40% Blesbok 30% Douglas Duff
Date Charged	22/9/58	24/9/58	1/10/58	29/9/58
Coking Time (hrs.)	16½	16½	16½	16½
Oven No. and) Temp. °C.)	3, 76, 66 1308°C.	67, 57, 37, 1315°C.	39, 29, 19 1314°C.	75, 65, 0 1307°C.
Colour	Grey.	Grey.	Dark gray to grey.	Grey.
Shape	Blocky with prismatic pieces.	Blocky with a large num- ber of pris- matic pieces.	Blocky, ir- regular with numerous pris- matic pieces.	Blocky, ir- regular with numerous pris- matic pieces.
Longitudinal Fissures.)	Large amount.	Large amount.	Large amount.	Large amount.
Transverse Fissures.)	Large amount.	Large amount.	Large amount.	Large amount.
Cell Structure	Fair.	Fair but variable.	Fair.	Fair.
Spongy Ends.	Normal amount.	Fair but variable.	Normal amount.	Normal amount.
Cauliflower ends.	Well to over- developed.	Well to over- developed; inclined to break off.	Well to over- developed; inclined to break off.	Well to over- developed; inclined to break off.
Ring.	Fair.	Fairly good, but variable.	Fair.	Fair.
Pebbly Material.	Large amount	Large amount	Large amount	Large amount
Remarks.	Coke has a similar appear- ance to Test 9. Prob- ably not met. coke.	Coke was very variable when sampled from the belt. Simi- lar to Test 10 but slightly better. Prob- ably met, coke.	Coke does not look as good Test 12. Prob- ably not met. coke.	Coke has a better app- earance than Test 11. Prob- ably met.

	14	6	16	7
ok as f	70% Douglas Duff (Series 2) 30% Natal	30% D.N.C. 70% Blesbok	30% Natal 70% Blesbok	70% Springbok 30% D.N.C.
B	2/10/58	11/9/58	8/10/58	12/9/58
	16½	18½	16½	18½
55 C.	28 1320°C.	68, 58, 48 1335°C.	70, 60, 50 1281°C.	37, 27, 17 1292°C.
	Dark grey to grey.	Dark grey to grey.	Dark grey.	Dark grey to grey.
r- ith ris- ces.	Blocky, ir- regular; large amount of pris- matic pieces.	Blocky.	Blocky, ir- regular, with large amount of prismatic pieces.	Blocky.
ant.	Large amount.	Large amount.	Large amount.	Fairly large amount.
ant.	Large amount.	Large amount.	Large amount.	Fairly large amount.
	Fair but variable.	Fairly good. Pores are larger.	Fair.	Good.
	Inclined to be above nor- mal amount.	Normal amount.	Normal amount.	Normal amount.
er- o	Well to over- developed; inclined to break off.	Well to over- developed; inclined to break off.	Well to over- developed; inclined to break off.	Well to over- developed; inclined to break off.
	Fair.	Fair.	Fair.	Good.
nt	Large amount	Large amount	Large amount	Large amount, but less than in Tests 1 to 6.
ear- rob- coke.	Coke is very small and probably not met. coke.	Coke has a rough appear- ance similar to Tests 1 to 5. Probably met. coke.	Coke has a rough appear- ance. Probably not met. coke.	Coke has a good appearance. Most probably met. coke.