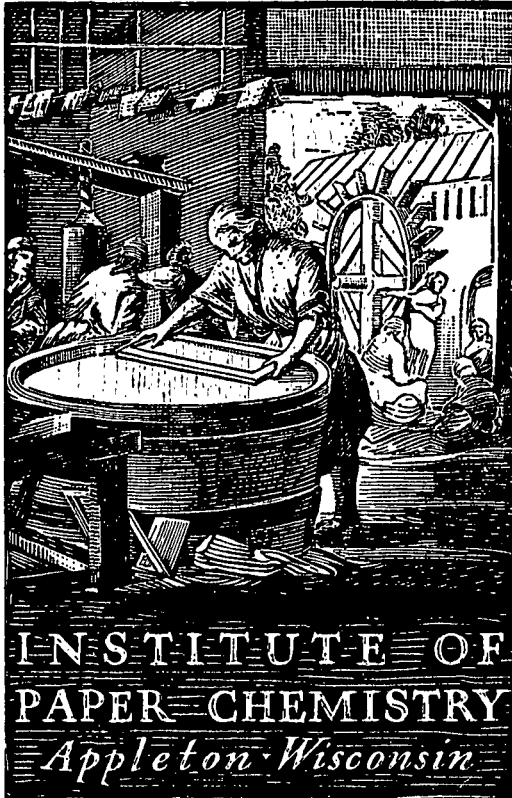


*Mr. Gross*

# BASE-LINE

(JANUARY-FEBRUARY, 1970)



## CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

(Data for January and February, 1970)

Project 2694-2

Report Eighteen

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

This material is intended only for the internal use of authorized  
persons within Fourdrinier Kraft Board Institute member companies

March 20, 1970

BASE-LINE  
(JANUARY-FEBRUARY, 1970)

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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# THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

## CONTINUOUS EVALUATION OF CORRUGATING MEDIUM (Data for January and February, 1970)

### SUMMARY

#### PART I. GENERAL

##### A. Participation Data:

	Current Period	Previous Period
Period	Jan.-Feb., 1970	Nov.-Dec., 1969
Number of machines	30	28
Number of rolls	107	95

##### B. Distribution of Mediums by Type:

Semichemical	28	28
Bogus	2	0
Kraft	0	0

##### C. New Participants:

None

None

##### D. Nonparticipants:

1. Chesapeake (West Point No. 1)	1. Chesapeake (West Point)
2. Continental Can (Hodge No. 1 and Hopewell No. 1)	2. Container Corp. (Circleville No. 5)
3. Olinkraft (West Monroe Nos. 1, 2, & 3)	3. Continental Can (Hodge No. 1 and Hopewell No. 1)
4. The Mead Corp. (Lynchburg No. 2)	4. Crown Zellerbach (Baltimore Nos. 1 & 2)
5. St. Joe Paper Co. (Port St. Joe No. 1)	5. Olinkraft, Inc. (W. Monroe Nos. 1 & 3).
6. St. Regis Paper Co. (Coshocton No. 1)	6. The Mead Corp. (Lynchburg No. 2)
7. Union Camp Corp. (Monroe No. 2)	7. St. Joe Paper Co. (Port St. Joe No. 1)
8. Westvaco (Covington No. 7)	8. St. Regis Paper Co. (Coshocton No. 1)
	9. Union Camp Corp. (Monroe No. 2)
	10. Weyerhaeuser (Longview No. 4)

## PART II. QUALITY DATA

### A. Summary of Physical Test Data

Test	Report	Machine Averages		F.K.I. Averages	
		Max.	Min.	Current	Cumulative
Basis weight, lb./1000 ft. <sup>2</sup>	Cur.	28.2	25.0	26.7	26.8
	Prev.	28.1	25.3	26.8	26.8
Caliper, pt.	Cur.	12.3	9.1	10.2	10.3
	Prev.	11.7	9.3	10.3	10.3
Concora flat crush, p.s.i.	Cur.	47.7	32.9	42.0	42.6
	Prev.	47.2	31.8	40.8	42.9
Single-face flat crush, p.s.i.	Cur.	34.8	24.6	30.2	31.9
	Prev.	34.7	24.7	30.3	32.1

### B. Summary of Runnability Data

Runnability		Current Period			Previous Period		
Speed, f.p.m.	Tension, lb./in.	No. of Rolls	% of Total	Cum., %	No. of Rolls	% of Total	Cum., %
<600	Min.	4	3.7	100.0	4	4.2	100.0
600	Min.	14	13.1	96.3	12	12.6	95.8
600	1/2	13	12.1	83.2	10	10.5	83.2
600	1	14	13.1	71.1	17	17.9	72.7
600	1-1/2	62	57.9	57.9	52	54.7	54.7

### C. Trends in Quality Data in Current Report with Reference to Data from Previous Report

#### Physical Tests:

Basis weight: Decreased from 26.8 to 26.7 lb./M.ft.<sup>2</sup>  
 Caliper: Decreased from 10.3 to 10.2 pt.  
 Concora flat crush: Increased from 40.8 to 42.0 p.s.i.  
 Single-face flat crush: Decreased from 30.3 to 30.2 p.s.i.

#### Runnability:

<600 f.p.m. at minimum tension: Decreased from 4.2 to 3.7%  
 600 f.p.m. at minimum tension: Increased from 12.6 to 13.1%  
 600 f.p.m. at 1/2 lb./in. tension: Increased from 10.5 to 12.1%  
 600 f.p.m. at 1 lb./in. tension: Decreased from 17.9 to 13.1%  
 600 f.p.m. at 1-1/2 lb./in. tension: Increased from 54.7 to 57.9%

Comment: The current runnability compares favorably with that of the previous report.

PART III. CONCORR CALIBRATION DATA

A. Summary of Data (Number and Percentage of Machines Included Within the Indicated Ranges)

Range, %	Current Period		Previous Period	
	No. of Machines	% of Total	No. of Machines	% of Total
+ 1.0	6	26.1	4	17.4
+ 2.5	13	56.5	8	34.8
+ 5.0	17	73.9	14	60.9
+10.0	23	100.0 <sup>a</sup>	22	95.7
			23	100.0 <sup>b</sup>

B. Significance of Calibration Data

The current level of agreement between Institute and mill Concorr flat crush data shows an improvement over the previous report.

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<sup>a</sup>Maximum percentage difference was -8.2.

<sup>b</sup>Maximum percentage difference was +14.4.

## INTRODUCTION

As requested by the Technical Division of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium have been prepared by The Institute of Paper Chemistry on a bimonthly instead of monthly basis since August, 1961. The current report summarizes the data obtained during January and February, 1970, on 107 rolls of corrugating medium submitted for evaluation from thirty machines.

Each roll was evaluated at the Institute for basis weight, caliper, Concora flat crush (tested immediately after fluting), H. and D. flat crush on single-faced board, and runnability. The reader's attention is directed to the fact that the current base-line report is the eleventh one in which Concora flat crush results were obtained on specimens tested immediately after fluting. Runnability was evaluated by corrugating each roll under standardized conditions on the Institute's single-facer into A-flute board at 600 feet per minute with minimum tension and recording the draw factor at this speed and tension if the roll ran satisfactorily. If unsatisfactory runnability occurred at this speed and tension, the single-facer was slowed down in increments of 25 f.p.m. using minimum tension until satisfactory runnability was obtained, i.e., until there was no visual evidence of fractured flutes. In this latter case the draw factor was recorded for the highest speed below 600 f.p.m. (with minimum tension) at which the roll ran satisfactorily. On the other hand, if initial fabrication of the roll was satisfactory at 600 f.p.m. with minimum tension, further runs were made at 600 f.p.m. using higher tension to determine the maximum tension at 600 f.p.m. which the medium could sustain without visual evidence of fracturing. The higher tensions used at 600 f.p.m. were 0.5, 1.0, and 1.5 lb./inch. For each roll, flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension, or if the roll could not be

corrugated satisfactorily at 600 f.p.m. with minimum tension, flat crush was determined on the single-faced board obtained at the highest speed below 600 f.p.m. at which the medium could be corrugated with minimum tension. The flat crush results on the single-faced board, in addition to supplying information about quality, also provide data which may be useful to each participant as a means of evaluating the nature of the quantitative relationship between Concora flat crush and combined board flat crush for his medium.

For each participating machine, test data for the current period are shown in Table I. A tabulation of the number of rolls and type of medium evaluated is also given in Table I for each machine. The current machine test averages given in Table I are the means for each test property of the averages obtained on all rolls of corrugating medium evaluated from a given machine during the current period. In addition to the current machine test averages, Table I also presents current F.K.I. averages, cumulative F.K.I. averages, and F.K.I. indexes. The current F.K.I. average for each test property is the mean of the current machine averages for the same property for all machines participating in the study during a given period. The cumulative F.K.I. average for a given test property is the mean of the current F.K.I. averages for the same property for the previous twelve-month period excluding the average for the current period. The F.K.I. index for each test property is obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index for each test property provides a convenient means of comparing current average quality with corresponding average quality for the previous six periods. An index greater than 100% indicates, of course, that current average quality is higher than the corresponding average quality for the previous six periods; similarly an index below 100% indicates that current average quality is lower than the corresponding average quality for the previous six periods.



TABLE I

SUMMARY OF CURRENT MACHINE AVERAGES

JANUARY AND FEBRUARY, 1970

MILL CODE	NO. OF ROLLS	TYPE OF MEDIUM	BASIS WEIGHT, LB.	CALIPER, POINTS	CONCORA FLAT CRUSH, P.S.I.	SINGLE-FACE FLAT CRUSH, P.S.I.
A	4	SEMICHEMICAL	26.6	10.5	39.3	28.4
B	4	SEMICHEMICAL	26.6	10.2	39.9	30.1
C	4	SEMICHEMICAL	25.0	9.8	44.0	33.1
D	4	SEMICHEMICAL	27.3	10.4	43.7	31.5
E	4	SEMICHEMICAL	26.0	9.6	39.0	27.6
F	3	SEMICHEMICAL	26.9	10.1	44.0	31.6
G	4	SEMICHEMICAL	26.5	9.2	44.2	32.0
H	4	SEMICHEMICAL	25.4	9.9	38.2	29.3
I	4	SEMICHEMICAL	25.4	9.4	32.9	25.6
J	3	SEMICHEMICAL	26.1	10.4	46.3	33.1
K	4	SEMICHEMICAL	26.7	10.5	43.4	30.6
L	4	SEMICHEMICAL	26.5	10.4	46.4	33.0
M	4	SEMICHEMICAL	26.8	10.0	44.9	30.8
N	1	SEMICHEMICAL	26.2	10.5	42.2	28.9
O	4	SEMICHEMICAL	27.8	9.1	46.4	34.8
P	2	BOGUS	27.6	9.9	41.0	28.2
Q	4	SEMICHEMICAL	26.9	10.4	44.1	30.7
R	4	SEMICHEMICAL	27.5	10.8	38.6	29.1
S	4	SEMICHEMICAL	27.2	10.2	40.6	29.8
T	4	SEMICHEMICAL	27.1	9.9	46.9	34.6
U	4	SEMICHEMICAL	26.5	9.8	39.3	29.4
V	3	SEMICHEMICAL	26.3	10.6	40.3	29.9
W	4	SEMICHEMICAL	26.2	10.6	40.9	30.2
X	4	SEMICHEMICAL	27.0	10.7	35.9	25.7
Y	2	BOGUS	26.6	9.8	37.8	24.8
Z	4	SEMICHEMICAL	27.1	12.3	38.8	24.6
AA	3	SEMICHEMICAL	27.3	10.7	42.3	28.4
BB	4	SEMICHEMICAL	27.2	10.4	47.7	33.1
CC	4	SEMICHEMICAL	28.2	9.4	45.2	34.5
DD	2	SEMICHEMICAL	26.6	9.2	45.9	32.6
TOTAL		107				
CURRENT F.K.I. AVERAGE			26.7	10.2	42.0	30.2
CUMULATIVE F.K.I. AVERAGE			26.8	10.3	42.6	31.9
F.K.I. INDEX, PERCENT			99.6	99.0	98.6	94.7

The test results obtained on the rolls submitted from the production of individual machines during the current period are shown in Tables II through XXXI for Machines A through Z and Machines AA, BB, CC, and DD respectively. For each machine, the maximum, minimum, and average results obtained on each roll are shown for all test properties except basis weight for which only the average is shown; in addition, the overall average result for all rolls submitted from a given machine is shown for each test property. The latter overall averages are reported as "current machine averages." A cumulative machine average for each test property is also shown and represents the mean of the current machine averages for the same property for the previous six periods (excluding the current period). Also shown for each machine and for each test property in Tables II to XXXI are a machine factor and machine index which are defined as follows:

$$\frac{\text{current machine average}}{\text{cumulative machine average}} \times 100 = \text{machine factor } (\%)$$

$$\frac{\text{current machine average}}{\text{cumulative F.K.I. average}} \times 100 = \text{machine index } (\%)$$

The machine factor and machine index provide a convenient means for comparing the current machine average for each test property with either the previous results obtained on the same machine for the same test property or with the cumulative result for all machines - i.e., the cumulative F.K.I. average for the same test property.

TABLE II

SUMMARY OF TEST RESULTS FOR MACHINE A

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
A-1	12- 5-69	2542	26.5	10.9	10.0	10.4	45.0	39.0	42.0	33.0	30.4	31.6	0.5	1.562
A-2	1- 7-70	2292	26.0	11.0	9.8	10.2	40.8	34.2	37.2	26.0	24.2	25.1	1.5	1.571
A-3	1-10-70	3842	26.9	11.6	10.9	11.1	40.2	33.0	37.3	25.6	24.4	24.9	1.0	1.568
A-4	2-10-70	4782	26.8	10.9	9.9	10.2	45.0	39.0	40.6	32.4	31.0	31.9	1.5	
CURRENT MACHINE AVERAGE			26.6			10.5			39.3			28.4		1.567
CUMULATIVE MACHINE AVERAGE			26.6			10.3			42.2			30.7		
MACHINE FACTOR, PERCENT			100.0			101.9			93.1			92.5		
MACHINE INDEX, PERCENT			99.2			101.9			92.2			89.0		

A Maximum tension at 600 f.p.m.

B 600 f.p.m. minimum tension.

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE B

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
B-1	12- 3-69	35	26.5	10.6	9.8	10.1	45.6	39.0	40.9	33.0	31.4	31.8	1.0	1.560
B-2	12-19-69	37	27.0	10.4	9.8	10.1	44.4	34.8	40.4	32.8	30.8	31.9	1.5	1.564
B-3	1- 6-70	39	25.3	10.5	9.1	9.8	36.0	32.4	34.6	27.0	25.2	25.9	0.5	1.566
B-4	1-14-70	41	27.6	11.1	10.1	10.8	46.8	42.6	43.8	31.4	30.0	30.9	1.5	1.572
CURRENT MACHINE AVERAGE			26.6			10.2			39.9			30.1		1.566
CUMULATIVE MACHINE AVERAGE			26.6			10.1			39.7			30.2		
MACHINE FACTOR, PERCENT			100.0			101.0			100.5			99.7		
MACHINE INDEX, PERCENT			99.2			99.0			93.7			94.4		

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE C

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CGDE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR#B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
C-1	12- 3-69	589	24.9	10.0	8.9	9.4	45.6	42.0	43.4	34.0	31.8	33.0	1.5	1.563
C-2	12-11-69	590	24.9	10.7	9.8	10.2	46.8	38.4	43.4	34.2	31.8	33.4	1.0	1.565
C-3	1- 4-70	591	25.2	10.2	9.8	10.0	48.0	40.2	44.4	33.6	31.4	32.6	1.0	1.566
C-4	1-12-70	592	25.2	9.9	9.0	9.5	47.4	41.4	45.0	34.4	32.8	33.4	MIN.	1.548
CURRENT MACHINE AVERAGE			25.0			9.8			44.0			33.1		1.561
CUMULATIVE MACHINE AVERAGE			26.1			10.0			46.4			35.0		
MACHINE FACTOR, PERCENT			95.8			98.0			94.8			94.6		
MACHINE INDEX, PERCENT			93.3			95.1			103.3			103.8		

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE D

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR#B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
D-1	12- 4-69		26.4	10.4	10.0	10.1	43.8	39.0	41.2	32.4	29.4	30.9	1.0	1.565
D-2	12-16-69		27.5	10.1	9.4	10.0	45.0	42.0	43.2	30.4	28.8	29.7	1.5	1.574
D-3	12-31-69		27.8	11.1	10.0	10.6	48.0	44.4	46.1	33.0	30.4	32.0	MIN.	1.552
D-4	1-14-70		27.4	11.0	10.3	10.8	45.6	42.0	44.2	34.8	32.0	33.3	0.5	
CURRENT MACHINE AVERAGE			27.3			10.4			43.7			31.5		1.564
CUMULATIVE MACHINE AVERAGE			27.5			9.7			43.1			32.6		
MACHINE FACTOR, PERCENT			99.3			107.2			101.4			96.6		
MACHINE INDEX, PERCENT			101.9			101.0			102.6			98.7		

\* See Table II for Notes A and B.

TABLE VI

## SUMMARY OF TEST RESULTS FOR MACHINE E

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
E-1	12-18-69	348	26.0	9.9	9.1	9.6	45.6	40.8	43.0	32.2	30.6	31.5	1.5	1.573
E-2	1- 8-70	349	25.1	10.0	9.1	9.7	41.4	35.4	37.8	27.0	25.0	26.0	1.5	1.570
E-3	1-22-70	350	26.4	9.9	9.0	9.3	43.8	37.8	41.6	32.2	28.2	30.4	1.5	1.575
E-4	2- 2-70	351	26.5	10.2	9.8	10.0	38.4	28.8	33.7	23.0	22.0	22.3	1.0	1.571
CURRENT MACHINE AVERAGE			26.0			9.6			39.0			27.6		1.572
CUMULATIVE MACHINE AVERAGE			26.6			9.9			41.1			30.2		
MACHINE FACTOR, PERCENT			97.7			97.0			94.9			91.4		
MACHINE INDEX, PERCENT			97.0			93.2			91.5			86.5		

TABLE VII

## SUMMARY OF TEST RESULTS FOR MACHINE F

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
F-1	12-16-69	819	27.4	11.0	9.9	10.2	45.6	41.4	43.0	33.4	32.2	32.8	1.5	1.576
F-2	1- 6-70	820	26.8	10.1	9.0	9.8	45.6	42.0	43.8	31.4	29.8	30.8	1.5	1.572
F-3	1-15-70	821	26.6	11.0	10.0	10.3	47.4	42.6	45.2	32.2	30.6	31.3	1.5	1.577
CURRENT MACHINE AVERAGE			26.9			10.1			44.0			31.6		1.575
CUMULATIVE MACHINE AVERAGE			26.4			10.0			42.6			32.1		
MACHINE FACTOR, PERCENT			101.9			101.0			103.3			98.4		
MACHINE INDEX, PERCENT			100.4			98.0			103.3			99.0		

\* See Table II for Notes A and B.

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE G

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
G-1	1-18-70		26.3	9.2	9.0	9.1	45.6	41.4	43.2	32.8	31.6	32.2	1.5	1.577
G-2	1-19-70		26.5	9.3	9.0	9.1	46.8	40.8	45.0	32.4	30.0	31.5	1.5	1.577
G-3	2- 7-70		26.8	10.1	9.2	9.4	48.0	41.4	44.8	33.8	31.4	32.8	1.5	
G-4	2- 8-70		26.3	9.5	9.1	9.2	44.4	42.0	43.6	31.8	31.4	31.6	1.5	
CURRENT MACHINE AVERAGE			26.5			9.2			44.2			32.0		1.577
CUMULATIVE MACHINE AVERAGE			26.7			9.5			44.0			33.6		
MACHINE FACTOR, PERCENT			99.2			96.8			100.4			95.2		
MACHINE INDEX, PERCENT			98.9			89.3			103.8			100.3		

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE H

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
H-1	11- 3-69	41	25.3	10.2	10.0	10.1	43.8	39.0	41.4	32.8	30.8	31.6	MIN.	1.551
H-2	12-31-69	42	25.0	10.3	9.9	10.1	37.2	34.2	36.0	29.0	27.6	28.3	MIN.	1.551
H-3	12-31-69	43	24.9	10.6	9.9	10.0	39.0	32.4	36.4	29.6	27.8	28.8	MIN.	1.559
H-4	2-12-70	46	26.6	10.0	9.1	9.4	40.8	36.6	38.9	29.0	27.6	28.4	1.0	1.586
CURRENT MACHINE AVERAGE			25.4			9.9			38.2			29.3		1.562
CUMULATIVE MACHINE AVERAGE			25.9			10.8			43.0			32.4		
MACHINE FACTOR, PERCENT			98.1			91.7			88.8			90.4		
MACHINE INDEX, PERCENT			94.8			96.1			89.7			91.8		

\* See Table II for Notes A and B.

TABLE X

## SUMMARY OF TEST RESULTS FOR MACHINE I

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
I-1	12- 7-69	L-1	25.1	9.9	9.0	9.2	34.2	29.4	31.7	25.4	23.8	24.4	1.5	1.570
I-2	12- 7-69	L-2	25.1	10.0	9.0	9.7	33.0	30.0	31.9	26.6	25.6	26.2	1.5	1.568
I-3	1-23-70	A-1	26.0	10.3	8.7	9.4	38.4	31.8	34.7	27.2	26.0	26.4	1.5	
I-4	1-23-70	A-2	25.2	9.9	9.0	9.3	35.4	30.0	33.2	25.8	25.0	25.3	1.5	
CURRENT MACHINE AVERAGE			25.4			9.4			32.9			25.6		1.569
CUMULATIVE MACHINE AVERAGE			26.4			9.7			35.1			27.4		
MACHINE FACTOR, PERCENT			96.2			96.9			93.7			93.4		
MACHINE INDEX, PERCENT			94.8			91.3			77.2			80.2		

TABLE XI

## SUMMARY OF TEST RESULTS FOR MACHINE J

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
J-1	1-21-70	832	25.2	11.0	10.0	10.5	52.2	42.6	46.4	33.4	30.8	32.3	1.0	1.565
J-2	1-22-70	833	26.2	11.0	9.9	10.4	51.0	45.6	48.2	34.8	31.8	34.0	1.0	1.560
J-3	2- 2-70	834	26.9	11.2	10.0	10.4	45.6	42.0	44.3	34.4	32.0	32.9	1.5	
CURRENT MACHINE AVERAGE			26.1			10.4			46.3			33.1		1.562
CUMULATIVE MACHINE AVERAGE			25.8			10.4			48.4			36.2		
MACHINE FACTOR, PERCENT			101.2			100.0			95.7			91.4		
MACHINE INDEX, PERCENT			97.4			101.0			108.7			103.8		

\* See Table II for Notes A and B.

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE K

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
K-1	12-15-69		27.6	10.9	10.1	10.4	48.6	40.2	45.0	34.6	32.0	33.0	0.5	1.559
K-2	1-21-70	101	26.3	10.4	10.0	10.2	42.6	38.4	40.4	29.4	27.8	28.7	0.5	1.570
K-3	1-26-70	102	26.5	11.0	10.1	10.6	48.0	40.2	43.1	32.0	29.0	30.4	0.5	1.566
K-4	1-28-70	103	26.5	11.0	10.4	10.7	48.6	40.8	44.9	30.8	29.6	30.2	0.5	1.566
CURRENT MACHINE AVERAGE			26.7			10.5			43.4			30.6		1.565
CUMULATIVE MACHINE AVERAGE			27.1			10.9			44.5			33.2		
MACHINE FACTOR, PERCENT			98.5			96.3			97.5			92.2		
MACHINE INDEX, PERCENT			99.6			101.9			101.9			95.9		

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE L

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
L-1	11-25-69	4602	26.8	10.7	9.8	10.1	49.8	40.2	46.0	34.0	31.4	32.9	MIN.	1.560
L-2	12- 4-69	4917	26.8	11.0	10.1	10.6	49.8	45.0	47.3	35.2	32.8	33.6	MIN.	1.553
L-3	12- 9-69	5088	26.5	10.5	10.0	10.2	52.8	48.6	50.9	37.6	35.8	36.6	MIN.	1.553
L-4	12-18-69	5342	25.9	11.1	10.5	10.9	44.4	37.8	41.4	29.4	28.0	28.8	MIN.	1.556
CURRENT MACHINE AVERAGE			26.5			10.4			46.4			33.0		1.556
CUMULATIVE MACHINE AVERAGE			26.4			10.0			45.5			34.4		
MACHINE FACTOR, PERCENT			100.4			104.0			102.0			95.9		
MACHINE INDEX, PERCENT			98.9			101.0			108.9			103.4		

\* See Table II for Notes A and B.



TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE M  
JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
M-1	11-28-69	201	26.3	9.9	9.1	9.6	45.0	39.0	40.7	29.4	27.6	28.4	1.5	1.578
M-2	11-28-69	202	26.4	10.0	9.5	9.9	48.0	44.4	45.8	32.2	30.4	31.4	1.5	1.575
M-3	11-28-69	203	27.4	10.8	10.1	10.4	48.0	43.8	45.6	31.4	29.0	29.8	1.5	1.576
M-4	11-28-69	204	27.2	10.1	10.0	10.0	49.8	43.2	47.4	34.2	32.4	33.5	1.5	1.575
CURRENT MACHINE AVERAGE			26.8			10.0			44.9			30.8		1.576
CUMULATIVE MACHINE AVERAGE			26.4			10.1			42.0			31.6		
MACHINE FACTOR, PERCENT			101.5			99.0			106.9			97.5		
MACHINE INDEX, PERCENT			100.0			97.1			105.4			96.6		

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE N  
JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
N-1	12-19-69	4422	26.2	11.0	10.1	10.5	46.2	40.2	42.2	29.8	28.4	28.9	1.5	1.574
CURRENT MACHINE AVERAGE			26.2			10.5			42.2			28.9		1.574
CUMULATIVE MACHINE AVERAGE			27.7			11.1			38.7			28.8		
MACHINE FACTOR, PERCENT			94.6			94.6			109.0			100.3		
MACHINE INDEX, PERCENT			97.8			101.9			99.1			90.6		

\* See Table II for Notes A and B.

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE O  
JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
0-1	12- 2-69	270	28.2	10.0	9.0	9.5	48.6	46.2	47.9	38.0	35.0	36.5	1.5	1.578
0-2	12-14-69	271	27.1	9.1	8.9	9.0	48.6	45.0	47.3	36.4	34.0	34.8	1.5	1.566
0-3	1- 7-70	274	28.3	9.2	8.8	9.0	52.2	46.2	49.4	38.6	36.4	37.6	1.5	1.563
0-4	1-19-70	275	27.4	9.0	8.5	8.9	43.2	39.0	40.9	31.4	28.2	30.5	1.5	1.576
CURRENT MACHINE AVERAGE			27.8			9.1			46.4			34.8		1.571
CUMULATIVE MACHINE AVERAGE			27.4			9.7			44.2			32.9		
MACHINE FACTOR, PERCENT			101.4			93.8			105.0			105.8		
MACHINE INDEX, PERCENT			103.7			88.3			108.9			109.1		

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE P  
JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- BUGUS

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
P-1		526	27.9	10.8	10.0	10.3	43.8	36.0	39.2	28.0	24.4	26.7	1.5	
P-2		527	27.4	10.0	8.9	9.5	45.0	40.8	42.8	31.4	28.0	29.8	1.5	
CURRENT MACHINE AVERAGE			27.6			9.9			41.0			28.2		
CUMULATIVE MACHINE AVERAGE			27.2			10.4			39.7			31.2		
MACHINE FACTOR, PERCENT			101.5			95.2			103.3			90.4		
MACHINE INDEX, PERCENT			103.0			96.1			96.2			88.4		

\*See Table II for Notes A and B.

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE Q  
JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
Q-1	1-19-70		27.1	11.0	9.9	10.4	47.4	39.6	43.6	32.4	30.8	31.5	1.5	1.574
Q-2	1-20-70		27.1	11.0	10.0	10.4	46.2	39.6	42.7	31.2	29.6	30.4	1.5	1.574
Q-3	2- 8-70		26.8	11.0	10.0	10.4	50.4	42.0	44.3	31.2	29.8	30.3	1.5	
Q-4	2- 9-70		26.7	11.3	10.0	10.6	47.4	42.0	45.7	32.0	29.4	30.6	1.5	
CURRENT MACHINE AVERAGE			26.9			10.4			44.1			30.7		1.574
CUMULATIVE MACHINE AVERAGE			27.0			10.6			44.3			32.4		
MACHINE FACTOR, PERCENT			99.6			98.1			99.5			94.8		
MACHINE INDEX, PERCENT			100.4			101.0			103.5			96.2		

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE R  
JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
R-1	11-29-69	223	27.6	10.5	10.0	10.2	45.0	36.6	40.6	33.4	31.8	32.8	NOTE C	1.553
R-2	12- 7-69	224	26.8	11.2	10.2	10.8	43.2	36.0	39.0	29.0	26.8	28.2	NOTE D	1.557
R-3	12-11-69	225	27.6	11.5	11.0	11.2	39.0	33.0	36.0	29.8	27.0	27.9	NOTE E	1.553
R-4	12-21-69	226	27.9	11.0	10.8	10.9	44.4	35.4	38.9	28.2	26.6	27.5	NOTE F	1.552
CURRENT MACHINE AVERAGE			27.5			10.8			38.6			29.1		1.554
CUMULATIVE MACHINE AVERAGE			27.7			11.4			40.0			29.0		
MACHINE FACTOR, PERCENT			99.3			94.7			96.5			100.3		
MACHINE INDEX, PERCENT			102.6			104.8			90.6			91.2		

\* See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 400 f.p.m.  
D Maximum speed at which this roll could be corrugated with minimum tension was 525 f.p.m.  
E Maximum speed at which this roll could be corrugated with minimum tension was 425 f.p.m.  
F Maximum speed at which this roll could be corrugated with minimum tension was 250 f.p.m.

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE S

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
S-1	12- 2-69	36	27.1	10.1	9.9	10.0	43.2	40.2	42.1	31.4	30.6	31.0	1.0	1.561
S-2	12-19-69	38	27.6	10.0	9.2	9.6	43.2	39.6	41.6	30.8	29.4	29.9	1.5	1.562
S-3	12-29-69	40	26.5	10.3	9.2	9.8	41.4	36.0	39.2	30.8	27.8	29.5	0.5	1.562
S-4	1-14-70	42	27.4	11.9	11.1	11.6	45.6	36.0	39.5	29.0	28.0	28.6	0.5	1.565
CURRENT MACHINE AVERAGE			27.2			10.2			40.6			29.8		1.563
CUMULATIVE MACHINE AVERAGE			26.2			10.2			40.5			30.4		
MACHINE FACTOR, PERCENT			103.8			100.0			100.2			98.0		
MACHINE INDEX, PERCENT			101.5			99.0			95.3			93.4		

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE T

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
T-1	11-13-69	718	27.9	10.4	9.9	10.1	50.4	43.8	47.6	36.4	35.2	36.0	1.5	1.573
T-2	11-25-69	719	27.9	11.0	10.0	10.6	51.6	45.0	48.1	36.4	32.4	34.8	1.5	1.570
T-3	1-13-70	720	26.2	10.0	9.2	9.7	50.4	41.4	45.5	34.8	30.6	33.2	1.5	1.577
T-4	1-18-70	721	26.4	9.3	9.0	9.2	50.4	44.4	46.4	36.2	33.6	34.6	1.5	1.577
CURRENT MACHINE AVERAGE			27.1			9.9			46.9			34.6		1.574
CUMULATIVE MACHINE AVERAGE			27.7			10.2			48.9			36.8		
MACHINE FACTOR, PERCENT			97.8			97.0			95.9			94.0		
MACHINE INDEX, PERCENT			101.1			96.1			110.1			108.5		

\* See Table II for Notes A and B.

TABLE XXII

## SUMMARY OF TEST RESULTS FOR MACHINE U

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR#B
U-1	12-18-69	348	26.5	10.1	9.9	10.0	45.6	37.8	40.1	30.8	28.8	29.5	1.5	1.574
U-2	1- 8-70	349	27.9	10.9	10.0	10.5	42.6	36.6	40.2	30.4	28.8	29.7	1.5	1.571
U-3	1-22-70	350	25.8	10.0	9.1	9.6	40.2	35.4	37.9	31.6	29.0	30.1	1.5	1.577
U-4	2- 2-70	351	25.7	9.5	8.9	9.1	42.0	36.6	38.9	29.2	27.4	28.4	1.5	1.569
CURRENT MACHINE AVERAGE			26.5			9.8			39.3			29.4		1.573
CUMULATIVE MACHINE AVERAGE			26.7			9.8			40.1			30.0		
MACHINE FACTOR, PERCENT			99.2			100.0			98.0			98.0		
MACHINE INDEX, PERCENT			98.9			95.1			92.2			92.2		

TABLE XXIII

## SUMMARY OF TEST RESULTS FOR MACHINE V

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR#B
V-1	10-22-69		26.7	11.2	10.5	10.9	43.2	39.6	41.0	30.0	28.4	29.4	1.5	1.576
V-2	10-29-69		26.3	11.0	10.8	10.9	43.2	36.6	40.3	32.8	31.4	31.9	1.5	1.570
V-3	1-28-70	301	25.9	10.2	10.0	10.1	41.4	37.8	39.5	29.6	27.6	28.4	1.0	1.569
CURRENT MACHINE AVERAGE			26.3			10.6			40.3			29.9		1.572
CUMULATIVE MACHINE AVERAGE			26.0			10.5			41.6			31.2		
MACHINE FACTOR, PERCENT			101.2			101.0			96.9			95.8		
MACHINE INDEX, PERCENT			98.1			102.9			94.6			93.7		

\* See Table II for Notes A and B.

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE M

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
W-1	11-22-69	159	26.3	11.1	10.3	10.7	43.8	38.4	42.1	33.0	31.6	32.1	1.0	1.565
W-2	11-23-69	160	26.3	11.1	10.5	10.9	43.2	37.8	40.6	30.4	27.0	28.9	0.5	1.565
W-3	12- 6-69	161	25.8	11.0	10.3	10.5	45.0	36.0	41.3	32.4	29.6	31.0	1.0	1.565
W-4		162	26.3	10.9	10.1	10.5	42.6	37.8	39.6	29.4	28.0	28.6	0.5	1.561
CURRENT MACHINE AVERAGE			26.2			10.6			40.9			30.2		1.564
CUMULATIVE MACHINE AVERAGE			26.4			10.8			40.2			31.0		
MACHINE FACTOR, PERCENT			99.2			98.1			101.7			97.4		
MACHINE INDEX, PERCENT			97.8			102.9			96.0			94.7		

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE X

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
X-1	12-12-69	358-1	27.4	11.3	10.8	11.0	36.6	30.6	33.0	26.0	24.4	25.1	1.5	1.566
X-2	12-19-69	343-2	26.9	11.0	10.0	10.4	41.4	37.2	39.6	28.6	27.2	27.9	1.5	1.571
X-3	12-29-69	359-1	26.7	11.3	10.2	10.7	38.4	34.2	36.8	26.8	23.2	24.9	1.5	1.570
X-4	1- 2-70	372-1	26.8	11.0	10.0	10.6	36.0	32.4	34.2	25.8	24.2	25.0	1.5	1.572
CURRENT MACHINE AVERAGE			27.0			10.7			35.9			25.7		1.570
CUMULATIVE MACHINE AVERAGE			27.6			11.2			39.6			29.3		
MACHINE FACTOR, PERCENT			97.8			95.5			90.6			87.7		
MACHINE INDEX, PERCENT			100.7			103.9			84.3			80.6		

\* See Table II for Notes A and B.

TABLE XXVI

## SUMMARY OF TEST RESULTS FOR MACHINE Y

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- BOGUS

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
Y-1	1- 4-70	426	26.2	10.1	9.0	9.6	45.0	27.6	35.0	26.2	22.8	24.0	1.5	
Y-2	1-29-70	427	27.1	10.2	9.2	9.9	44.4	38.4	40.7	27.0	24.2	25.7	1.5	
CURRENT MACHINE AVERAGE			26.6			9.8			37.8			24.8		
CUMULATIVE MACHINE AVERAGE			26.9			9.6			41.2			30.8		
MACHINE FACTOR, PERCENT			98.9			100.0			91.7			80.5		
MACHINE INDEX, PERCENT			99.2			95.1			88.7			77.7		

TABLE XXVII

## SUMMARY OF TEST RESULTS FOR MACHINE Z

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
Z-1	12- 5-69	2741	27.4	11.1	10.8	11.0	44.4	36.6	39.8	26.4	25.6	26.0	0.5	1.568
Z-2	1- 6-70	2432	27.3	14.3	12.0	13.2	41.4	36.0	38.0	25.0	23.2	24.0	MIN.	1.563
Z-3	1- 6-70	2442	26.8	13.9	12.2	13.0	40.2	36.6	38.8	25.6	24.0	24.8	MIN.	1.562
Z-4	2- 9-70	4512	26.8	12.2	11.7	12.0	40.2	37.8	38.6	24.6	23.0	23.8	1.5	
CURRENT MACHINE AVERAGE			27.1			12.3			38.8			24.6		1.564
CUMULATIVE MACHINE AVERAGE			26.7			11.4			41.2			28.7		
MACHINE FACTOR, PERCENT			101.5			107.9			94.2			85.7		
MACHINE INDEX, PERCENT			101.1			119.4			91.1			77.1		

\* See Table II for Notes A and B.

TABLE XXVIII

## SUMMARY OF TEST RESULTS FOR MACHINE AA

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
AA-1	12- 3-69	2063	26.7	10.5	10.0	10.1	44.4	39.0	41.3	30.6	27.0	29.2	MIN.	1.550
AA-2	1-21-70	2064	27.7	11.1	10.9	11.0	47.4	41.4	43.7	29.6	27.4	28.5	MIN.	1.554
AA-3	1-30-70	2071	27.6	11.1	10.9	11.0	45.0	38.4	41.8	28.0	27.0	27.5	MIN.	
CURRENT MACHINE AVERAGE			27.3			10.7			42.3			28.4		1.552
CUMULATIVE MACHINE AVERAGE			27.2			10.7			41.8			30.1		
MACHINE FACTOR, PERCENT			100.4			100.0			101.2			94.4		
MACHINE INDEX, PERCENT			101.9			103.9			99.3			89.0		

TABLE XXIX

## SUMMARY OF TEST RESULTS FOR MACHINE BB

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY DRAW	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	FACTOR*B
BB-1	1-19-70		27.1	10.9	10.1	10.6	52.2	48.0	49.6	35.0	33.8	34.6	1.5	1.574
BB-2	1-20-70		27.1	11.0	10.0	10.5	51.6	46.2	48.8	35.6	33.0	34.3	1.5	1.569
BB-3	2- 6-70		27.3	10.7	10.0	10.2	49.8	43.2	46.0	33.2	31.2	32.0	1.5	
BB-4	2- 7-70		27.2	10.6	10.0	10.2	51.0	43.8	46.3	32.6	30.8	31.6	1.5	
CURRENT MACHINE AVERAGE			27.2			10.4			47.7			33.1		1.572
CUMULATIVE MACHINE AVERAGE			26.7			10.5			44.8			33.9		
MACHINE FACTOR, PERCENT			101.9			99.0			106.5			97.6		
MACHINE INDEX, PERCENT			101.5			101.0			112.0			103.8		

\*See Table II for Notes A and B.



TABLE XXX

## SUMMARY OF TEST RESULTS FOR MACHINE CC

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*8
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
CC-1	12-23-69	272	27.9	9.1	8.7	8.9	45.0	37.8	42.0	34.2	29.6	32.5	1.5	1.567
CC-2	12-26-69	273	28.2	10.0	9.0	9.7	48.0	44.4	46.2	35.0	31.8	34.0	1.5	1.567
CC-3	1-20-70	276	28.4	9.8	8.9	9.2	49.2	42.6	45.8	37.6	34.8	35.9	1.5	1.568
CC-4	1-20-70	277	28.3	10.0	9.5	9.7	49.8	45.0	47.0	36.8	34.4	35.5	1.5	1.568
CURRENT MACHINE AVERAGE			28.2			9.4			45.2			34.5		1.568
CUMULATIVE MACHINE AVERAGE			27.3			9.8			43.9			32.8		
MACHINE FACTOR, PERCENT			103.3			95.9			103.0			105.2		
MACHINE INDEX, PERCENT			105.2			91.3			106.1			108.2		

TABLE XXXI

## SUMMARY OF TEST RESULTS FOR MACHINE DD

JANUARY AND FEBRUARY, 1970

TYPE OF MEDIUM- SEMICHEMICAL

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCORA FLAT CRUSH, P.S.I.			SINGLE-FACE FLAT CRUSH, P.S.I.			RUNNABILITY LB./IN.*A	DRAW FACTOR*8
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
DD-1	1-17-70	4524	26.8	9.4	9.0	9.2	48.6	40.8	45.0	34.0	31.0	32.7	1.0	1.560
DD-2	1-20-70	4601	26.3	9.8	9.0	9.3	51.0	43.2	46.8	34.8	29.6	32.6	0.5	1.565
CURRENT MACHINE AVERAGE			26.6			9.2			45.9			32.6		1.563
CUMULATIVE MACHINE AVERAGE			26.8			9.9			44.8			34.0		
MACHINE FACTOR, PERCENT			99.2			92.9			102.4			95.9		
MACHINE INDEX, PERCENT			99.2			89.3			107.7			102.2		

\* See Table II for Notes A and B.

## DISCUSSION OF RESULTS

Shown on page 2, Part II, Section "A" of the Summary are the maximum and minimum current machine averages obtained for each test property during the current period and the previous period. Also shown for each test property is the current F.K.I. average which represents the mean of the current machine averages and hence is indicative of the test level being maintained by the industry as a whole for each test property to the extent that the industry is represented by the participating machines. Also given for each test property is the cumulative F.K.I. average which represents the mean of the current F.K.I. averages for the previous six periods.

The runnability data for the 107 rolls evaluated during the current period and the 95 rolls evaluated during the previous period are summarized on page 2, Part II, Section "B" of the Summary.

Supplementary to the runnability data, draw factors were determined for each roll of medium at 600 f.p.m. with minimum tension (or, for rolls with poor runnability, at the maximum speed runnable with minimum tension) and are given in Tables II through XXXI for Machines A through Z and Machines AA, BB, CC, and DD, respectively.

In Table XXXII, an effort has been made to compare Institute and mill Concora flat crush test results for each machine for the current period. The following information is presented in this table: (1) Current machine average based on Institute data, (2) current machine average based on mill data, (3) the average difference — that is, the difference between the current machine average based on Institute data and the current machine average based on mill data, and (4) the average differences expressed as percentage differences, along with the percent differences of the previous two-month period. In those cases where mill Concora flat crush data are

TABLE XXXII

A COMPARATIVE SUMMARY FOR EACH MACHINE OF THE CONCORA  
FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND MILL DATA

Machine Code	No. of Rolls Compared	Concora Flat Crush, p.s.i.			Av. Diff., % <sup>c</sup>	
		I.P.C. Av. <sup>a</sup>	Mill Av. <sup>a</sup>	Av. Diff. <sup>b</sup>	Current	Previous
A	4	39.3	39.4 <sub>d</sub>	+0.1	+0.3	-0.2
B	0	39.9	31.9 <sub>d</sub>	--	--	--
C	0	44.0	34.6 <sub>d</sub>	--	--	--
D	4	43.7	44.9	+1.2	+2.7	+6.6
E	4	39.0	37.8	-1.2	-3.1	-3.0
F	3	44.0	40.9	-3.1	-7.0	-7.3
G	4	44.2	43.7	-0.5	-1.1	+2.3
H	4	38.2	39.3	+1.1	+2.9	+8.4
I	4	32.9	33.3 <sub>d</sub>	+0.4	+1.2	-0.6
J	0	46.3	35.3 <sub>d</sub>	--	--	--
K	4	43.4	42.5	-0.9	-2.1	+6.0
L	4	46.4	42.6	-3.8	-8.2	-7.7
M	4	44.9	44.1	-0.8	-1.8	--
N	1	42.2	42.2	0.0	0.0	-2.7
O	4	46.4	43.0	-3.4	-7.3	-4.9
P	0	41.0	-- <sup>e</sup>	--	--	--
Q	4	44.1	43.9	-0.2	-0.5	+6.4
R	4	38.6	37.7 <sub>d</sub>	-0.9	-2.3	-4.5
S	0	40.6	33.2 <sub>d</sub>	--	--	--
T	0	46.9	37.9 <sub>d</sub>	--	--	--
U	4	39.3	39.5	+0.2	+0.5	+2.9
V	3	40.3	40.1	-0.2	-0.5	+14.4
W	4	40.9	40.3	-0.6	-1.5	+6.5
X	3	35.6	37.8	+2.2	+6.2	0.0
Y	0	37.8	-- <sup>e</sup>	--	--	--
Z	4	38.8	39.0	+0.2	+0.5	+2.6
AA	2	42.5	41.9	-0.6	-1.4	+0.8
BB	4	47.7	45.2	-2.5	-5.2	+1.8
CC	4	45.2	43.6	-1.6	-3.5	-2.3
DD	2	45.9	43.0	-2.9	-6.3	--

<sup>a</sup>Comparisons based on current machine average include only those rolls for which mill data were submitted.

<sup>b</sup>Average difference is the difference between the current machine average based on Institute test results and that based on mill test results with the Institute test results used as the reference.

<sup>c</sup>Average difference (percent) is computed by dividing the average difference in p.s.i. by the Institute current machine average and multiplying by 100.

<sup>d</sup>Mill data were not obtained on specimens tested immediately after fluting.

<sup>e</sup>No mill data available.

still obtained on specimens conditioned after fluting, no average differences between current machine averages based on Institute and mill data are shown. The inclusion of these comparisons is made possible by the fact that interested participants submit their Concora flat crush test results to The Institute of Paper Chemistry (on data sheets obtainable from the Institute). This affords each participant an opportunity to review the level of agreement noted for his data with the levels noted for the other participants. Comparisons of this kind are a helpful adjunct to other calibration procedures.

THE INSTITUTE OF PAPER CHEMISTRY

*R. C. McKee / gjs*

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R. C. McKee, Chairman  
Container Section