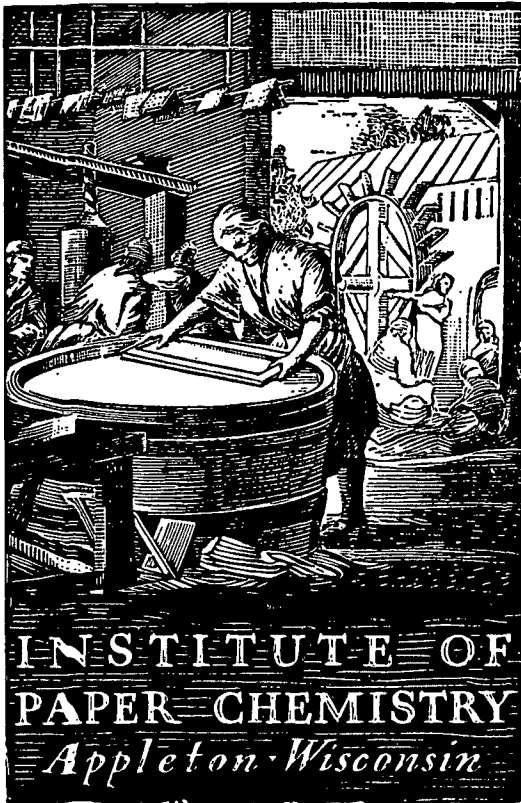


Boone  
2

# BASE-LINE

(NOVEMBER-DECEMBER, 1970)



## CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

(Data for November and December, 1970)

Project 2694-2

Report Twenty-Three

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

January 22, 1971

BASE-LINE  
(NOVEMBER-DECEMBER, 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 NOVEMBER AND DECEMBER, 1970)

SUMMARY

PART I. GENERAL

A. Participation Data:

	Previous Period	Current Period
Period	Sept.-Oct., 1970	Nov.-Dec., 1970
Number of machines	27	29
Number of rolls	91	114

B. Distribution of Mediums by Type:

Semichemical	27	29
Bogus	0	0
Kraft	0	0

C. New Participants:

None

None

D. Nonparticipants:

1. Alton Box (Alton Nos. 3 & 4)	1. Alton Box (Alton Nos. 3 & 4)
2. Container Corp. (Circleville No. 5)	2. Boise Cascade (Wallula No. 2)
3. Continental Can Hopewell No. 1)	3. Container Corp. (Circleville No. 5)
4. Crown Zellerbach (Baltimore Nos. 1 & 2, Lebanon No. 2)	4. Continental Can (Hopewell No. 1)
5. Olinkraft (West Monroe No. 2)	5. Crown Zellerbach (Baltimore Nos. 1 & 2)
6. St. Joe (Port St. Joe No. 1)	6. St. Joe (Port St. Joe No. 1)
7. Westvaco (Covington No. 6)	

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.	27.7	26.0	26.7	26.7
	Prev.	28.0	25.4	26.5	26.7
Caliper, pt.	Cur.	11.8	9.2	10.1	10.1
	Prev.	11.5	9.1	10.0	10.2
Concora flat crush, p.s.i.	Cur.	50.6	31.8	41.2	42.0
	Prev.	48.9	33.4	43.3	41.9
Single-face flat crush, p.s.i.	Cur.	37.0	25.8	31.0	31.0
	Prev.	36.2	24.5	31.7	31.1

B. Summary of Runnability Data

Runnability		Previous Period			Current Period		
Speed, f.p.m.	Tension, lb./in.	No. of Rolls	% of Total	Cum., %	No. of Rolls	% of Total	Cum., %
<600	Min.	7	7.7	100.0	16	14.0	100.0
600	Min.	18	19.8	92.3	17	14.9	86.0
600	1/2	12	13.2	72.5	22	19.3	71.1
600	1	14	15.4	59.3	13	11.4	51.8
600	1-1/2	40	43.9	43.9	46	40.4	40.4

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

Physical Tests:

Basis weight: Increased from 26.5 to 26.7 lb./M ft.<sup>2</sup>  
 Caliper: Increased from 10.0 to 10.1 pt.  
 Concora flat crush: Decreased from 43.3 to 41.2 p.s.i.  
 Single-face flat crush: Decreased from 31.7 to 31.0 p.s.i.

Runnability:

<600 f.p.m. at minimum tension: Increased from 7.7 to 14.0%.  
 600 f.p.m. at minimum tension: Decreased from 19.8 to 14.9%.  
 600 f.p.m. at 1/2 lb./in. tension: Increased from 13.2 to 19.3%.  
 600 f.p.m. at 1 lb./in. tension: Decreased from 15.4 to 11.4%.  
 600 f.p.m. at 1-1/2 lb./in. tension: Decreased from 43.9 to 40.4%.

Comments: The current runnability is slightly lower than that of the previous period.

PART III. CONCORA CALIBRATION DATA

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

Range, %	Previous Period		Current Period	
	No. of Machines	% of Total	No. of Machines	% of Total
<u>±</u> 1.0	3	13.6	2	8.0
<u>±</u> 2.5	7	31.8	9	36.0
<u>±</u> 5.0	14	63.6	16	64.0
<u>±</u> 10.0	21	95.5	25	100.0 <sup>b</sup>
<u>±</u> 15.0	22	100.0 <sup>a</sup>		

B. Significance of Calibration Data

The current level of agreement between Institute and mill Concora flat crush data compares favorably with that of the previous report.

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<sup>a</sup>Maximum percentage difference was -12.2.

<sup>b</sup>Maximum percentage difference was +7.7.

## 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 November and December, 1970, on 114 rolls of corrugating medium submitted for evaluation from twenty-nine 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. 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



TABLE I  
SUMMARY OF CURRENT MACHINE AVERAGES  
NOV. AND DEC., 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	26.8	10.3	42.7	33.4
B	4	SEMICHEMICAL	26.6	9.4	42.8	30.4
C	5	SEMICHEMICAL	26.7	10.1	40.1	31.4
D	4	SEMICHEMICAL	27.5	10.4	43.2	34.3
E	4	SEMICHEMICAL	26.5	9.8	39.6	30.2
F	3	SEMICHEMICAL	26.5	10.4	40.1	29.5
G	4	SEMICHEMICAL	27.4	11.0	39.8	27.9
H	8	SEMICHEMICAL	26.3	11.6	36.2	28.2
I	4	SEMICHEMICAL	26.5	10.2	35.8	26.2
J	4	SEMICHEMICAL	27.0	9.2	42.6	33.8
K	4	SEMICHEMICAL	26.0	9.7	38.3	30.0
L	4	SEMICHEMICAL	27.0	10.6	43.2	31.2
M	4	SEMICHEMICAL	27.1	10.2	38.8	28.2
N	4	SEMICHEMICAL	26.0	10.3	43.1	33.4
O	1	SEMICHEMICAL	26.3	10.6	50.6	36.5
P	4	SEMICHEMICAL	26.8	9.7	31.8	25.8
Q	4	SEMICHEMICAL	27.7	11.8	41.6	28.6
R	5	SEMICHEMICAL	26.4	10.2	42.6	31.6
S	4	SEMICHEMICAL	27.1	9.7	42.6	31.8
T	4	SEMICHEMICAL	26.3	10.2	48.8	35.6
U	4	SEMICHEMICAL	26.6	10.4	40.4	29.6
V	4	SEMICHEMICAL	27.2	9.6	41.7	32.3
W	4	SEMICHEMICAL	26.6	9.8	39.0	28.6
X	4	SEMICHEMICAL	26.4	10.0	39.1	30.3
Y	4	SEMICHEMICAL	26.2	9.3	40.8	29.8
Z	4	SEMICHEMICAL	26.9	9.4	48.4	37.0
AA	2	SEMICHEMICAL	26.0	9.6	38.8	31.2
BB	2	SEMICHEMICAL	27.2	10.2	40.5	31.1
CC	4	SEMICHEMICAL	26.4	10.2	42.1	31.2
TOTAL	114					
CURRENT F.K.I. AVERAGE			26.7	10.1	41.2	31.0
CUMULATIVE F.K.I. AVERAGE			26.7	10.1	42.0	31.0
F.K.I. INDEX, PERCENT			100.0	100.0	98.1	100.0

periods; similarly an index below 100% indicates that current average quality is lower than the corresponding average quality for the previous six periods.

The test results obtained on the rolls submitted from the production of individual machines during the current period are shown in Tables II through XXX for Machines A through Z and Machines AA, BB, and CC, 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 XXX 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  
NOV. AND DEC., 1970

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCRA 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	12-9-70		27.0	10.5	10.0	10.2	49.8	41.4	45.1	35.0	33.2	34.0	1.5	1.569
A-2	12-10-70		26.6	10.1	9.9	10.0	48.0	37.8	43.0	37.2	35.0	35.8	1.5	1.573
A-3	12-14-70		26.9	10.9	10.1	10.5	43.2	39.0	40.8	32.6	30.4	31.6	1.5	1.569
A-4	12-16-70		26.7	11.0	10.0	10.5	44.4	37.8	42.0	33.4	31.0	32.4	1.5	1.564
CURRENT MACHINE AVERAGE			26.8	10.3			42.7			33.4			1.569	
CUMULATIVE MACHINE AVERAGE			26.8	10.4			46.7			34.3				
MACHINE FACTOR, PERCENT			100.0	99.0			91.4			97.4				
MACHINE INDEX, PERCENT			100.4	102.0			101.7			107.7				

<sup>A</sup>Maximum tension at 600 f.p.m.  
<sup>B</sup>600 f.p.m. minimum tension.

TABLE III  
SUMMARY OF TEST RESULTS FOR MACHINE B  
NOV. AND DEC., 1970

CODE	DATE MADE	MILL ROLL NO.	BASIS WT., LB./M. SQ. FT.	CALIPER, PT.			CONCRA 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	10-18-70	1846	26.3	9.6	9.0	9.2	46.8	44.4	45.8	33.6	30.8	32.2	MIN.	1.559
B-2	10-26-70	2082	26.8	10.0	9.2	9.6	43.8	37.8	40.7	27.2	26.0	26.4	0.5	1.560
B-3	11-21-70	2823	26.3	9.8	9.0	9.3	43.8	36.0	40.3	30.0	28.6	29.4	0.5	1.566
B-4	11-27-70	2968	27.2	10.0	9.1	9.6	47.4	42.0	44.4	34.0	33.0	33.6	0.5	1.560
CURRENT MACHINE AVERAGE			26.6	9.4			42.8			30.4			1.561	
CUMULATIVE MACHINE AVERAGE			27.0	9.8			45.6			34.0				
MACHINE FACTOR, PERCENT			98.5	95.9			93.8			89.4				
MACHINE INDEX, PERCENT			99.6	93.1			101.9			98.1				

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE C  
NOV. AND DEC., 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*8
C-1	10- 1-70	500	26.5	10.2	9.9	10.0	45.0	34.8	40.2	30.2	28.8	29.6	1.0	1.568
C-2	11- 2-70	70	27.1	10.9	10.0	10.3	47.4	38.4	40.6	34.4	31.0	32.6	1.5	1.565
C-3	11-11-70	400	26.7	10.6	10.0	10.1	44.4	36.6	39.5	34.0	30.8	32.4	1.5	1.563
C-4	11-24-70	710	26.3	10.5	9.9	10.1	40.2	34.8	37.8	30.8	30.0	30.5	1.0	1.566
C-5	12- 2-70	76	26.7	10.2	9.9	10.0	45.0	40.2	42.4	33.0	30.8	32.0	1.5	1.565
CURRENT MACHINE AVERAGE			26.7	10.1			40.1			31.4			1.566	
CUMULATIVE MACHINE AVERAGE			26.3	10.2			40.0			29.9				
MACHINE FACTOR, PERCENT			101.5	99.0			100.2			105.0				
MACHINE INDEX, PERCENT			100.0	100.0			95.5			101.3				

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE D  
NOV. AND DEC., 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*8
D-1	8-22-70	6199	27.4	10.1	9.9	10.0	50.4	39.0	44.3	38.4	35.6	36.6	MIN.	1.555
D-2	8-22-70	6200	26.8	10.2	10.0	10.1	51.0	39.0	43.6	35.6	33.8	34.8	MIN.	1.545
D-3	9- 4-70	7159	27.8	11.1	10.2	10.8	46.8	37.2	42.2	32.0	30.0	31.2	NOTE C	1.539
D-4	9- 4-70	7163	27.9	11.0	10.2	10.8	49.8	37.8	42.8	36.4	33.2	34.6	NOTE D	1.538
CURRENT MACHINE AVERAGE			27.5	10.4			43.2			34.3			1.544	
CUMULATIVE MACHINE AVERAGE			27.4	11.2			41.9			31.9				
MACHINE FACTOR, PERCENT			100.4	92.8			103.1			107.5				
MACHINE INDEX, PERCENT			103.0	103.0			102.8			110.6				

\*See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 300 f.p.m.

D Maximum speed at which this roll could be corrugated with minimum tension was 500 f.p.m.

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE E

NOV. AND DEC., 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
E-1	9-24-70	33	26.2	10.3	9.8	10.0	40.8	32.4	37.0	30.6	27.6	28.7	1.5	1.548
E-2	10-24-70	37	26.8	10.2	9.9	10.0	44.4	39.6	41.6	31.6	30.4	31.0	0.5	1.559
E-3	11- 6-70	39	26.5	9.9	9.0	9.4	41.4	35.4	37.9	29.0	27.8	28.4	1.5	1.565
E-4	11-18-70	41	26.5	10.1	9.8	10.0	49.2	37.8	41.8	34.0	32.0	32.7	1.5	1.561
CURRENT MACHINE AVERAGE			26.5	9.8			39.6			30.2			1.558	
CUMULATIVE MACHINE AVERAGE			26.6	10.3			38.6			28.8				
MACHINE FACTOR, PERCENT			99.6	95.1			102.6			104.9				
MACHINE INDEX, PERCENT			99.2	97.0			94.3			97.4				

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE F

NOV. AND DEC., 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
F-1	10-19-70	9072	27.6	11.0	10.0	10.5	41.4	36.6	40.0	30.8	28.0	29.6	1.5	1.563
F-2	11- 6-70	2951	26.3	10.6	10.0	10.3	44.4	40.8	42.0	31.6	29.8	30.6	1.0	1.570
F-3	11-18-70	8982	25.7	11.0	10.0	10.3	42.0	34.8	38.3	29.8	27.4	28.4	1.0	1.571
CURRENT MACHINE AVERAGE			26.5	10.4			40.1			29.5			1.568	
CUMULATIVE MACHINE AVERAGE			26.6	10.5			40.5			29.8				
MACHINE FACTOR, PERCENT			99.6	99.0			99.0			99.0				
MACHINE INDEX, PERCENT			99.2	103.0			95.5			95.2				

\* See Table II for Notes A and B.

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE G  
NOV. AND DEC., 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	10-14-70	2135	28.1	11.0	10.3	10.7	42.6	39.0	41.0	30.8	28.8	30.1	NOTE C	1.545
G-2	11- 1-70	2141	27.9	11.5	11.0	11.2	43.8	40.2	41.6	28.8	26.6	27.5	NOTE D	1.549
G-3	11-23-70	2142	26.8	11.2	11.0	11.1	39.6	36.0	37.6	28.0	26.8	27.4	MIN.	1.550
G-4	12- 3-70	2149	27.0	11.4	10.0	10.8	41.4	37.8	38.8	27.2	25.8	26.5	0.5	1.556
CURRENT MACHINE AVERAGE			27.4	11.0			39.8			27.9			1.550	
CUMULATIVE MACHINE AVERAGE			27.2	10.3			41.4			29.5				
MACHINE FACTOR, PERCENT			100.7	106.8			96.1			94.6				
MACHINE INDEX, PERCENT			102.6	108.9			94.8			90.0				

\* See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 500 f.p.m.

D Maximum speed at which this roll could be corrugated with minimum tension was 525 f.p.m.

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE H  
NOV. AND DEC., 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	10-19-70	1	26.5	12.8	11.7	12.2	34.2	31.8	33.5	27.8	26.0	27.0	MIN.	1.555
H-2	10-19-70	2	26.7	12.5	11.2	11.9	38.4	33.6	36.5	30.6	28.2	29.1	MIN.	1.550
H-3	10-21-70	3	25.6	13.0	11.9	12.2	34.8	32.4	33.4	27.8	24.0	26.2	NOTE C	1.545
H-4	10-24-70	4	26.0	12.1	11.2	11.8	40.8	34.2	37.0	29.6	27.4	28.6	MIN.	1.548
H-5	11- 4-70	7	25.8	11.2	10.3	11.0	39.0	36.0	37.4	29.8	28.4	29.1	MIN.	1.558
H-6	11- 7-70	8	26.2	11.2	10.9	11.0	39.0	33.0	37.1	30.0	26.8	28.0	MIN.	1.558
H-7	11-12-70	9	27.3	12.2	11.2	11.7	37.2	35.4	36.5	28.8	28.0	28.3	NOTE D	1.550
H-8		10	26.2	11.1	10.2	10.8	40.2	35.4	37.9	31.2	27.4	29.6	0.5	1.558
CURRENT MACHINE AVERAGE			26.3	11.6			36.2			28.2			1.553	
CUMULATIVE MACHINE AVERAGE			26.8	10.9			40.4			30.4				
MACHINE FACTOR, PERCENT			98.1	106.4			89.6			92.8				
MACHINE INDEX, PERCENT			98.5	114.8			86.2			91.0				

\* 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 450 f.p.m.

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE I  
NOV. AND DEC., 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
I-1	10-23-70	262	26.5	10.9	9.9	10.1	34.8	30.6	32.9	25.6	23.4	24.4	NOTE C	1.557
I-2	10-29-70	263	26.9	10.9	10.0	10.1	39.0	36.0	37.3	29.6	25.8	27.3	MIN.	1.562
I-3	11- 7-70	264	26.5	10.0	9.1	9.9	40.8	35.4	37.6	27.6	25.4	26.6	NOTE C	1.552
I-4	11-15-70	265	26.0	11.1	10.3	10.8	39.0	31.2	35.6	27.2	25.8	26.6	MIN.	1.561
CURRENT MACHINE AVERAGE			26.5	10.2			35.8			26.2			1.558	
CUMULATIVE MACHINE AVERAGE			27.2	10.7			38.9			28.4				
MACHINE FACTOR, PERCENT			97.4	95.3			92.0			92.2				
MACHINE INDEX, PERCENT			99.2	101.0			85.2			84.5				

\* See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 450 f.p.m.

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE J  
NOV. AND DEC., 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
J-1	10- 1-70	310	27.7	10.0	8.7	9.1	46.8	39.6	43.2	36.2	33.6	34.6	NOTE C	1.547
J-2	10-14-70	313	27.9	9.8	8.8	9.0	46.8	41.4	44.3	36.4	33.4	34.8	NOTE D	1.540
J-3	11- 8-70	314	26.0	9.0	8.4	8.8	45.0	39.6	41.6	33.4	30.0	31.9	NOTE E	1.546
J-4	11-10-70	315	26.5	10.1	9.0	9.7	45.6	37.8	41.2	Fractured			NOTE F	1.517
CURRENT MACHINE AVERAGE			27.0	9.2			42.6			33.8			1.538	
CUMULATIVE MACHINE AVERAGE			27.3	9.2			44.3			33.1				
MACHINE FACTOR, PERCENT			98.9	100.0			96.2			102.1				
MACHINE INDEX, PERCENT			101.1	91.1			101.4			109.0				

\* See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 200 f.p.m.

D Maximum speed at which this roll could be corrugated with minimum tension was 425 f.p.m.

E Maximum speed at which this roll could be corrugated with minimum tension was 275 f.p.m.

F Maximum speed at which this roll could be corrugated with minimum tension was >100 f.p.m.

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE K

NOV. AND DEC., 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
K-1	10-7-70	36	26.5	10.0	9.7	9.9	44.4	39.0	41.0	32.4	30.8	31.4	1.5	1.569
K-2	10-24-70	38	25.9	10.8	9.7	10.1	40.8	36.0	37.9	31.6	30.8	31.2	1.0	1.565
K-3	11-6-70	40	25.7	10.0	9.0	9.4	42.0	36.0	38.8	30.2	27.6	29.1	1.5	1.561
K-4	11-18-70	42	25.9	10.0	9.0	9.4	38.4	29.4	35.6	28.8	27.8	28.4	1.0	1.558
CURRENT MACHINE AVERAGE			26.0	9.7			38.3			30.0			1.563	
CUMULATIVE MACHINE AVERAGE			26.8	10.3			38.8			28.7				
MACHINE FACTOR, PERCENT			97.0	94.2			98.7			104.5				
MACHINE INDEX, PERCENT			97.4	96.0			91.2			96.8				

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE L

NOV. AND DEC., 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
L-1	10-28-70	8	27.8	11.0	10.1	10.6	52.2	37.2	43.3	32.0	29.6	31.0	1.5	1.569
L-2	11-22-70	9	26.5	10.6	10.0	10.2	43.2	39.0	40.9	31.8	29.8	31.0	1.5	1.571
L-3	11-30-70	10	26.8	11.1	10.4	10.8	47.4	40.2	43.3	30.6	28.8	29.8	1.5	1.566
L-4	12-1-70	11	27.1	11.0	10.2	10.7	51.0	41.4	45.5	34.4	32.6	33.2	1.5	1.568
CURRENT MACHINE AVERAGE			27.0	10.6			43.2			31.2			1.569	
CUMULATIVE MACHINE AVERAGE			26.8	10.2			46.7			34.2				
MACHINE FACTOR, PERCENT			100.7	103.9			92.5			91.2				
MACHINE INDEX, PERCENT			101.1	105.0			102.8			100.6				

\* See Table II for Notes A and B.



TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE M

NOV. AND DEC., 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
M-1	10-19-70	368	27.1	10.8	10.1	10.4	41.4	33.0	36.8	28.4	26.4	27.3	1.5	1.575
M-2	11- 3-70	369	28.7	10.8	9.8	10.2	44.4	39.6	42.1	30.6	28.4	29.0	1.5	1.578
M-3	11-17-70	370	26.7	10.0	9.5	9.9	41.4	39.6	40.6	29.8	28.4	29.0	1.5	1.572
M-4	12- 2-70	371	25.8	10.3	9.9	10.1	40.2	33.6	35.8	28.0	26.4	27.6	0.5	1.557
CURRENT MACHINE AVERAGE			27.1	10.2			38.8			28.2			1.571	
CUMULATIVE MACHINE AVERAGE			26.6	9.8			39.2			28.8				
MACHINE FACTOR, PERCENT			101.9	104.1			99.0			97.9				
MACHINE INDEX, PERCENT			101.5	101.0			92.4			91.0				

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE N

NOV. AND DEC., 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
N-1	9-21-70	3929	25.2	10.6	9.9	10.2	47.4	40.8	43.6	36.6	34.0	35.4	0.5	1.557
N-2	10-21-70	4869	25.9	10.6	9.8	10.1	45.6	40.2	43.7	34.8	32.6	33.8	MIN.	1.555
N-3	10-23-70	4937	26.0	10.8	10.0	10.2	44.4	39.6	41.8	33.0	32.0	32.5	1.0	1.564
N-4	10-26-70	5049	27.1	11.1	10.0	10.8	46.8	40.2	43.2	32.8	31.0	32.0	0.5	1.557
CURRENT MACHINE AVERAGE			26.0	10.3			43.1			33.4			1.558	
CUMULATIVE MACHINE AVERAGE			26.0	9.9			45.5			34.3				
MACHINE FACTOR, PERCENT			100.0	104.0			94.7			97.4				
MACHINE INDEX, PERCENT			97.4	102.0			102.6			107.7				

\* See Table II for Notes A and B.

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE O  
NOV. AND DEC., 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	10-27-70	847	26.3	11.3	10.0	10.6	55.8	47.4	50.6	38.0	35.4	36.5	0.5	1.565
CURRENT MACHINE AVERAGE			26.3	10.6			50.6			36.5			1.565	
CUMULATIVE MACHINE AVERAGE			25.6	10.1			46.9			34.9				
MACHINE FACTOR, PERCENT			102.7	105.0			107.9			104.6				
MACHINE INDEX, PERCENT			98.5	105.0			120.5			117.7				

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE P  
NOV. AND DEC., 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
P-1	11-18-70	K-1	26.0	10.1	8.9	9.5	31.8	25.2	28.8	25.0	23.0	23.5	1.0	1.572
P-2	11-18-70	K-2	26.9	10.0	9.1	9.6	33.0	24.6	28.9	25.8	24.2	25.3	0.5	1.575
P-3	12- 3-70	L-1	26.7	10.1	9.3	9.9	37.8	31.8	35.0	28.4	25.8	27.1	1.5	1.574
P-4	12- 3-70	L-2	27.4	10.1	9.1	9.7	38.4	31.2	34.6	27.8	27.0	27.5	1.5	1.573
CURRENT MACHINE AVERAGE			26.8	9.7			31.8			25.8			1.574	
CUMULATIVE MACHINE AVERAGE			26.4	9.7			32.8			24.9				
MACHINE FACTOR, PERCENT			101.5	100.0			97.0			103.6				
MACHINE INDEX, PERCENT			100.4	96.0			75.7			83.2				

\*See Table II for Notes A and B.

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE Q

NOV. AND DEC., 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*8
Q-1	10-14-70	7382	28.2	13.0	12.0	12.4	44.4	40.8	42.2	29.8	28.4	29.0	MIN.	1.558
Q-2	11- 3-70	1022	27.4	12.1	11.2	11.8	42.6	39.0	41.3	30.4	27.8	29.2	0.5	1.566
Q-3	11- 9-70	4872	27.9	11.9	10.9	11.2	46.2	39.6	43.0	31.0	28.0	29.2	1.0	1.567
Q-4	12- 3-70	1192	27.3	12.0	11.0	11.6	42.6	36.6	39.8	27.6	26.2	27.0	1.5	1.569
CURRENT MACHINE AVERAGE			27.7	11.8			41.6			28.6			1.565	
CUMULATIVE MACHINE AVERAGE			26.7	11.7			39.9			27.3				
MACHINE FACTOR, PERCENT			103.7	100.8			104.3			104.8				
MACHINE INDEX, PERCENT			103.7	116.8			99.0			92.2				

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE R

NOV. AND DEC., 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*8
R-1	9-28-70	600	25.7	9.8	9.0	9.2	44.4	37.8	41.4	30.8	28.6	30.0	1.5	1.565
R-2	10- 5-70	501	26.5	10.9	10.2	10.5	46.8	37.8	43.0	33.2	30.2	31.8	0.5	1.563
R-3	10-12-70	1110	26.5	11.0	10.1	10.5	50.4	40.2	43.7	33.4	31.0	31.9	0.5	1.558
R-4	10-19-70	2560	26.5	10.9	10.5	10.7	43.2	38.4	40.9	32.6	30.4	31.6	0.5	1.560
R-5	10-27-70	4700	26.8	10.5	10.0	10.2	47.4	40.2	44.2	33.2	31.8	32.8	0.5	1.562
CURRENT MACHINE AVERAGE			26.4	10.2			42.6			31.6			1.562	
CUMULATIVE MACHINE AVERAGE			26.6	10.1			42.4			30.8				
MACHINE FACTOR, PERCENT			99.2	101.0			100.5			102.6				
MACHINE INDEX, PERCENT			98.9	101.0			101.4			101.9				

\* See Table II for Notes A and B.

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE S

NOV. AND DEC., 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	12-11-70		27.1	9.9	9.0	9.3	47.4	39.0	42.1	34.2	32.0	32.8	1.5	1.567
S-2	12-12-70		27.0	10.0	9.2	9.6	46.2	37.2	42.4	33.0	30.6	31.5	1.5	1.570
S-3	12-13-70		27.4	10.1	9.8	10.0	46.8	39.6	43.9	32.8	30.8	31.8	1.5	1.570
S-4	12-14-70		26.8	10.0	9.8	10.0	47.4	38.4	42.1	31.6	30.2	31.1	1.5	1.570
CURRENT MACHINE AVERAGE			27.1	9.7			42.6			31.8			1.569	
CUMULATIVE MACHINE AVERAGE			26.5	9.6			44.4			33.0				
MACHINE FACTOR, PERCENT			102.3	101.0			95.9			96.4				
MACHINE INDEX, PERCENT			101.5	96.0			101.4			102.6				

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE T

NOV. AND DEC., 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	10-13-70	607	26.8	11.1	10.0	10.5	53.4	48.6	51.8	38.2	36.0	37.2	1.5	1.563
T-2	10-27-70	608	26.0	11.1	10.0	10.5	51.0	46.2	47.9	35.8	34.6	35.1	1.0	1.563
T-3	11- 1-70	609	26.0	10.0	9.0	9.5	49.2	44.4	47.8	33.8	31.8	32.8	0.5	1.563
T-4	11-10-70	610	26.3	11.2	9.4	10.5	50.4	43.2	47.6	38.6	36.0	37.5	1.5	1.557
CURRENT MACHINE AVERAGE			26.3	10.2			48.8			35.6			1.562	
CUMULATIVE MACHINE AVERAGE			25.8	9.9			46.5			34.9				
MACHINE FACTOR, PERCENT			101.9	103.0			104.9			102.0				
MACHINE INDEX, PERCENT			98.5	101.0			116.2			114.8				

\* See Table II for Notes A and B.

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE U  
NOV. AND DEC., 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- 9-70		26.7	10.3	10.0	10.1	42.6	38.4	40.2	30.6	29.2	29.8	1.5	1.575
U-2	12-10-70		26.6	11.1	10.0	10.4	43.2	37.8	39.7	31.0	29.0	29.9	1.5	1.578
U-3	12-13-70		26.5	11.0	10.1	10.4	42.0	39.6	41.0	29.8	27.4	29.0	1.5	1.570
U-4	12-14-70		26.8	11.0	10.0	10.5	43.8	39.0	40.9	29.8	28.8	29.5	1.5	1.573
CURRENT MACHINE AVERAGE			26.6	10.4			40.4			29.6			1.574	
CUMULATIVE MACHINE AVERAGE			26.7	10.3			43.9			31.8				
MACHINE FACTOR, PERCENT			99.6	101.0			92.0			93.1				
MACHINE INDEX, PERCENT			99.6	103.0			96.2			95.5				

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE V  
NOV. AND DEC., 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	10-12-70	311	27.4	10.8	9.8	10.2	42.6	37.8	40.3	32.0	30.6	31.4	C.5	1.563
V-2	10-13-70	312	27.8	10.9	9.8	10.2	44.4	37.8	42.4	34.2	31.6	33.2	NOTE C	1.541
V-3	11-16-70	316	26.6	9.2	9.0	9.1	43.8	39.0	41.9	31.4	30.8	31.2	NOTE D	1.540
V-4	11-23-70	317	26.8	9.1	8.6	8.9	44.4	38.4	42.1	35.2	32.4	33.5	NOTE E	1.543
CURRENT MACHINE AVERAGE			27.2	9.6			41.7			32.3			1.547	
CUMULATIVE MACHINE AVERAGE			27.6	9.4			44.8			33.9				
MACHINE FACTOR, PERCENT			98.6	102.1			93.1			95.3				
MACHINE INDEX, PERCENT			101.9	95.0			99.3			104.2				

\* See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 250 f.p.m.

D Maximum speed at which this roll could be corrugated with minimum tension was 425 f.p.m.

E Maximum speed at which this roll could be corrugated with minimum tension was 225 f.p.m.

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE W  
NOV. AND DEC., 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
W-1	10-19-70	368	26.4	10.0	9.5	9.9	39.6	35.4	37.4	28.2	27.0	27.5	1.5	1.569
W-2	11- 8-70	369	26.5	10.0	9.1	9.6	42.0	38.4	40.7	29.2	27.0	28.2	1.0	1.573
W-3	11-17-70	370	26.9	10.0	9.1	9.7	43.8	39.0	41.8	30.6	29.2	29.9	0.5	1.570
W-4	12- 2-70	371	26.6	10.2	10.0	10.1	40.2	31.8	36.2	30.6	28.0	28.8	0.5	1.559
CURRENT MACHINE AVERAGE			26.6	9.8			39.0			28.6			1.568	
CUMULATIVE MACHINE AVERAGE			26.6	9.8			41.0			29.8				
MACHINE FACTOR, PERCENT			100.0	100.0			95.1			96.0				
MACHINE INDEX, PERCENT			99.6	97.0			92.8			92.2				

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE X  
NOV. AND DEC., 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
X-1	10-27-70	5	26.9	10.1	9.9	10.0	38.4	34.8	36.7	31.2	28.4	29.6	MIN.	1.560
X-2	10-28-70	6	26.0	10.2	9.8	10.0	43.8	30.6	37.4	29.4	27.6	28.5	MIN.	1.560
X-3	11-29-70	11	26.3	10.7	10.0	10.2	45.6	36.0	40.2	31.6	28.4	30.0	1.0	1.568
X-4	11-29-70	12	26.6	10.2	9.9	10.0	44.4	39.6	42.0	35.2	31.8	33.1	1.5	1.564
CURRENT MACHINE AVERAGE			26.4	10.0			39.1			30.3			1.563	
CUMULATIVE MACHINE AVERAGE			26.6	10.2			41.4			30.6				
MACHINE FACTOR, PERCENT			99.2	98.0			94.4			99.0				
MACHINE INDEX, PERCENT			98.9	99.0			93.1			97.7				

\* See Table II for Notes A and B.

TABLE XXVI

SUMMARY OF TEST RESULTS FOR MACHINE Y  
NOV. AND DEC., 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
Y-1	9-30-70	19	27.1	10.0	9.8	9.9	47.4	40.2	43.3	32.8	30.8	31.9	1.5	1.568
Y-2	10-27-70	20	26.0	9.8	9.1	9.5	42.6	36.0	38.5	29.4	26.4	27.8	1.5	1.570
Y-3	10-29-70	21	26.0	9.2	8.1	8.8	43.8	40.8	42.0	29.8	28.6	29.2	0.5	1.566
Y-4	11- 3-70	22	25.6	9.2	8.9	9.0	42.0	37.8	39.5	31.8	28.8	30.3	1.0	1.569
CURRENT MACHINE AVERAGE			26.2	9.3			40.8			29.8			1.568	
CUMULATIVE MACHINE AVERAGE			27.1	10.0			42.2			31.6				
MACHINE FACTOR, PERCENT			96.7	93.0			96.7			94.3				
MACHINE INDEX, PERCENT			98.1	92.1			97.1			96.1				

TABLE XXVII

SUMMARY OF TEST RESULTS FOR MACHINE Z  
NOV. AND DEC., 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	10- 3-70	739	26.5	9.2	8.8	9.0	53.4	46.8	49.4	37.2	34.0	35.8	MIN.	1.544
Z-2	10-16-70	740	26.8	9.3	8.9	9.0	55.8	47.4	51.2	38.6	36.8	37.8	MIN.	1.555
Z-3	11- 4-70	741	26.9	10.0	9.0	9.8	49.8	43.2	45.8	38.0	33.6	36.3	1.5	1.570
Z-4	11-21-70	742	27.4	10.0	9.3	9.8	48.6	45.0	47.3	39.4	37.6	38.2	1.5	1.572
CURRENT MACHINE AVERAGE			26.9	9.4			48.4			37.0			1.560	
CUMULATIVE MACHINE AVERAGE			26.7	9.8			48.6			35.7				
MACHINE FACTOR, PERCENT			100.7	95.9			99.6			103.6				
MACHINE INDEX, PERCENT			100.7	93.1			115.2			119.4				

\* See Table II for Notes A and B.

TABLE XXVIII

SUMMARY OF TEST RESULTS FOR MACHINE AA

NOV. AND DEC., 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
AA-1	10-27-70	59	26.0	10.0	9.4	9.7	38.4	34.8	36.7	33.0	29.2	30.8	NOTE C	1.550
AA-2	10-28-70	60	26.0	9.9	9.0	9.4	43.8	37.2	40.9	32.4	31.0	31.7	0.5	1.563
CURRENT MACHINE AVERAGE			26.0	9.6			38.8			31.2			1.557	
CUMULATIVE MACHINE AVERAGE			26.2	9.8			39.2			30.0				
MACHINE FACTOR, PERCENT			99.2	98.0			99.0			104.0				
MACHINE INDEX, PERCENT			97.4	95.0			92.4			100.6				

\* See Table II for Notes A and B.

C Maximum speed at which this roll could be corrugated with minimum tension was 500 f.p.m.

TABLE XXIX

SUMMARY OF TEST RESULTS FOR MACHINE BB

NOV. AND DEC., 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
BB-1		229	27.0	10.9	9.8	10.2	41.4	38.4	39.7	32.4	30.2	31.3	1.5	1.563
BB-2		230	27.4	10.3	9.9	10.1	45.0	37.2	41.3	32.0	30.4	30.9	1.5	1.564
CURRENT MACHINE AVERAGE			27.2	10.2			40.5			31.1			1.564	
CUMULATIVE MACHINE AVERAGE			26.3	10.1			42.6			32.3				
MACHINE FACTOR, PERCENT			103.4	101.0			95.1			96.3				
MACHINE INDEX, PERCENT			101.9	101.0			96.4			100.3				



TABLE XXX

SUMMARY OF TEST RESULTS FOR MACHINE CC

NOV. AND DEC., 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
CC-1	10- 7-70	838	25.7	10.0	9.2	9.8	48.0	42.0	44.8	34.0	31.4	32.6	1.5	1.566
CC-2	10-17-70	839	26.4	10.8	9.8	10.2	42.0	37.2	40.7	32.4	30.8	31.5	1.5	1.568
CC-3	11- 4-70	840	26.3	11.1	10.0	10.4	43.2	39.0	40.9	30.0	27.8	28.7	1.5	1.566
CC-4	11-22-70	841	27.0	11.0	10.0	10.2	47.4	37.8	42.0	32.8	31.2	32.1	1.5	1.567
CURRENT MACHINE AVERAGE			26.4	10.2			42.1			31.2			1.567	
CUMULATIVE MACHINE AVERAGE			26.4	10.0			42.7			31.6				
MACHINE FACTOR, PERCENT			100.0	102.0			98.6			98.7				
MACHINE INDEX, PERCENT			98.9	101.0			100.2			100.6				

\* 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 114 rolls evaluated during the current period and the 91 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 XXX for Machines A through Z and Machines AA, BB, and CC, respectively.

In Table XXXI, 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 percentage differences of the previous two-month period. In those cases where mill Concora flat crush data

TABLE XXXI

A COMPARATIVE SUMMARY FOR EACH MACHINE OF THE CONCORA  
FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND MILL DATA  
NOVEMBER AND DECEMBER, 1970

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	42.7	45.6	+2.9	+6.8	-2.9
B	4	42.8	42.5	-0.3	-0.7	-8.3
C	5	40.1	42.7	+2.6	+6.5	-0.7
D	4	43.2	41.2	-2.0	-4.6	--
E	4	39.6	38.5	-1.1	-2.8	--
F	3	40.1	41.4	+1.3	+3.2	-3.2
G	3	39.3	37.3	-2.0	-5.1	+4.9
H	8	36.2	38.4	+2.2	+6.1	--
I	4	35.8	36.5	+0.7	+2.0	-0.8
J	4	42.6	41.9	-0.7	-1.6	-3.7
K	4	38.3	37.2	-1.1	-2.9	--
L	4	43.2	44.2	+1.0	+2.3	-6.3
M	4	38.8	39.4	+0.6	+1.5	-1.3
N	4	43.1	42.5 <sup>d</sup>	-0.6	-1.4	-3.3
O	0	50.6	38.6 <sup>d</sup>	--	--	--
P	4	31.8	33.6	+1.8	+5.7	+8.7
Q	4	41.6	41.7	+0.1	+0.2	-3.6
R	5	42.6	44.8	+2.2	+5.2	+9.4
S	4	42.6	44.0 <sup>d</sup>	+1.4	+3.3	+2.0
T	0	48.8	38.0 <sup>d</sup>	--	--	--
U	4	40.4	43.0	+2.6	+6.4	-2.8
V	4	41.7	42.6	+0.9	+2.2	-6.2
W	4	39.0	40.6	+1.6	+4.1	-5.3
X	4	39.1	41.0	+1.9	+4.9	-5.2
Y	4	40.8	43.2	+2.4	+5.9	-0.9
Z	0	48.4	38.4 <sup>d</sup>	--	--	--
AA	2	38.8	41.8 <sup>e</sup>	+3.0	+7.7	-2.5
BB	0	40.5	-- <sup>e</sup>	--	--	--
CC	3	41.2	40.3	-0.9	-2.2	-1.6

<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.

are 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 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.

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