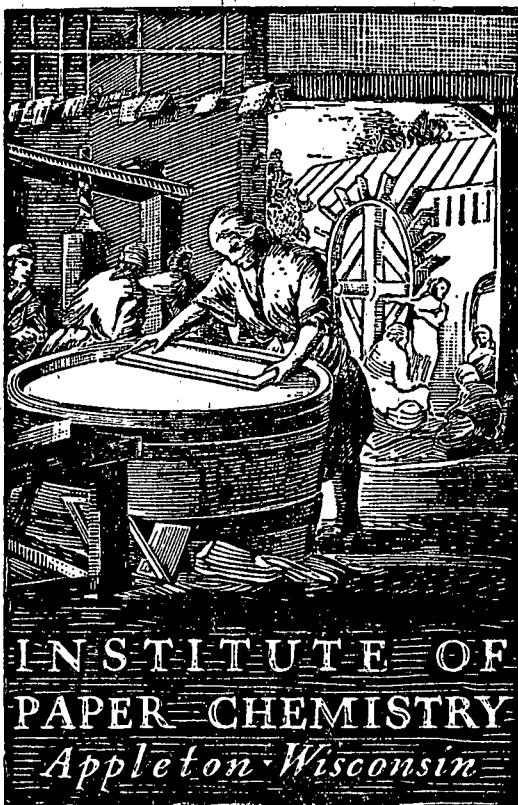


March-April

BASE-LINE

(MARCH-APRIL, 1969)



**CONTINUOUS EVALUATION OF
CORRUGATING MEDIUM**

(Data for March and April, 1969)

Project 2694-2

Report Thirteen

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

May 23, 1969

BASE-LINE
(March-April, 1969)

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 March and April, 1969)

SUMMARY

PART I. GENERAL

A. Participation Data:

	Previous Period Jan.-Feb., 1969	Current Period March-April, 1969
Period		
Number of machines	34	32

Number of rolls 117 116

B. Distribution of Mediums by Type:

Semichemical	32	30
Bogus	2	2
Kraft	0	0

C. New Participants: None None

D. Nonparticipants:	1. Chesapeake (West Point No. 1)	1. Chesapeake (West Point)
	2. Crown Zellerbach (Lebanon No. 2)	2. Continental Can (Hodge No. 1)
	3. The Mead Corp. (Knoxville No. 1)	3. The Mead Corp. (Knoxville No. 1)
	4. Olinkraft, Inc. (W. Monroe No. 1 & 3)	4. Olinkraft, Inc. (W. Monroe No. 1, 2, & 3)
	5. St. Joe Paper Co. (Port St. Joe No. 1)	5. St. Joe Paper Co. (Port St. Joe No. 1)
	6. St. Regis Paper Co. (Coshocton No. 1)	6. St. Regis Paper Co. (Coshocton No. 1)
	7. Union Camp Corp. (Monroe No. 2)	7. Union Camp Corp. (Monroe No. 2)
		8. Weyerhaeuser (Longview No. 4)

PART II. QUALITY DATA

A. Summary of Physical Test Data

Test	Report	Machine Average	Min.	F.K.I. Averages	Current	Cumulative
Basis weight	Cur.	28.1	25.2	26.7	27.0	27.0
lb./1000 ft. ²	Prev.	28.6	26.0	27.0	27.0	27.0
Crush, pt.	Cur.	11.8	9.2	10.4	10.4	10.4
Concora flat crush, p.s.i.	Cur.	52.0	36.6	42.6	42.9	42.9
Singgle-face flat crush, p.s.i.	Cur.	38.6	26.4	32.5	32.3	32.3
	Prev.	49.1	37.2	42.8	42.9	42.9
	Prev.	37.6	27.1	32.1	32.3	32.3
	Prev.	37.6	27.6	32.1	32.3	32.3
	Min.	8	6.8	100.0	4	3.4
	Max.	8	16	12	2	1.7
	No.	8	16	12	2	1.7
	% of Rolls	100.0	88.9	88.9	88.9	88.9
	% of Rolls	100.0	93.2	93.2	93.2	93.2
	Total	6.8	12.6	12.6	12.6	12.6
	No.	8	16	12	2	1.7
	%	100.0	84.6	94.9	96.6	99.0
	Cum.	8	16	12	2	1.7

B. Summary of Runnability Data

Speed, f.p.m.	Tension, lb./in.	No.	% of Column,	Previous Period	Current Period	% of Rolls	Total	% Cum.,
<600	Min.	8	6.8	100.0	4	3.4	100.0	99.0
600	Max.	8	16	12	2	1.7	96.6	94.9
600	1/2 Min.	5	4.3	93.2	2	1.7	94.9	94.6
600	1/2 Max.	5	4.3	93.2	2	1.7	94.9	84.6
600	1	16	12.6	12	2	1.7	94.9	94.6
600	1-1/2	85	72.6	89	76.7	76.7	76.7	76.7%

Physical Tests:

Basis weight: Decreased from 27.0 to 26.7 lb./M. ft.²

Runnability:

<600 f.p.m. at minimum tension: Decreased from 6.8 to 3.4%

600 f.p.m. at 1/2 lb./in. tension: Decreased from 2.6 to 1.7%

600 f.p.m. at minimum tension: Increased from 4.3 to 1.7%

600 f.p.m. at 1 lb./in. tension: Decreased from 2.6 to 1.0.3%

600 f.p.m. at 1-1/2 lb./in. tension: Increased from 72.6 to 76.7%

Concora flat crush: Decreased from 42.8 to 42.6 p.s.i.

Caliper: Decreased from 10.5 to 10.4 pt.

Slingle-face flat crush: Decreased from 31.6 to 31.5 p.s.i.

Gauge length: Decreased from 27.0 to 26.7 lb./M. ft.²

Comments: No significant changes in runnability were noted.

Comment: No significant changes in runnability were noted.

600 f.p.m. at 1-1/2 lb./in. tension: Increased from 72.6 to 76.7%

600 f.p.m. at 1 lb./in. tension: Decreased from 2.6 to 1.7%

600 f.p.m. at minimum tension: Decreased from 4.3 to 1.7%

600 f.p.m. at 1/2 lb./in. tension: Increased from 2.6 to 1.0.3%

600 f.p.m. at 1-1/2 lb./in. tension: Decreased from 72.6 to 76.7%

Concora flat crush: Decreased from 42.8 to 42.6 p.s.i.

Caliper: Decreased from 10.5 to 10.4 pt.

Slingle-face flat crush: Decreased from 31.6 to 31.5 p.s.i.

Gauge length: Decreased from 27.0 to 26.7 lb./M. ft.²

Comments: No significant changes in runnability were noted.

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

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
± 1.0	6	24.0	3	14.3
± 2.5	8	32.0	6	28.6
± 5.0	15	60.0	11	52.4
± 10.0	24	96.0	20	95.2
Max.	25	100.0 ^a	21	100.0 ^b

B. Significance of Calibration Data

The current level of agreement between Institute and mill Concora flat crush data is somewhat lower than the previous report.

^aMaximum percentage difference was -15.0.

^bMaximum percentage difference was -10.1.

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 March and April, 1969, on 116 rolls of corrugating medium submitted for evaluation from thirty-two 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 seventh 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 and presented graphically in Fig. 1 and 2. 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:

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

TABLE I

SUMMARY OF CURRENT MACHINE AVERAGES

MARCH AND APRIL, 1969

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	10.8	46.2	34.1
B	4	SEMICHEMICAL	27.1	10.8	42.6	30.8
C	3	SEMICHEMICAL	26.9	9.4	44.4	32.6
D	4	SEMICHEMICAL	25.6	10.0	46.9	35.0
E	4	SEMICHEMICAL	26.8	9.9	38.1	28.5
F	4	SEMICHEMICAL	26.2	11.0	40.2	30.2
G	2	SEMICHEMICAL	27.0	10.3	38.4	30.0
H	2	SEMICHEMICAL	26.2	10.0	40.6	30.0
I	4	SEMICHEMICAL	27.8	10.0	52.0	38.6
J	2	SEMICHEMICAL	25.8	11.0	38.8	30.3
K	4	SEMICHEMICAL	26.3	10.8	43.2	32.2
L	4	SEMICHEMICAL	27.4	10.9	45.5	31.8
M	4	SEMICHEMICAL	28.1	11.8	36.6	26.4
N	4	SEMICHEMICAL	26.2	9.9	44.4	32.1
O	4	SEMICHEMICAL	26.7	10.7	38.1	28.3
P	4	SEMICHEMICAL	26.6	10.6	46.0	32.9
Q	4	SEMICHEMICAL	26.0	9.9	40.6	30.2
R	4	SEMICHEMICAL	26.2	9.7	49.7	37.2
S	3	SEMICHEMICAL	25.2	11.2	42.0	32.3
T	4	SEMICHEMICAL	27.5	10.5	46.1	32.8
U	4	SEMICHEMICAL	27.4	10.1	43.6	30.6
V	4	SEMICHEMICAL	26.4	9.2	43.2	32.3
W	4	SEMICHEMICAL	26.4	10.8	43.3	31.1
X	4	SEMICHEMICAL	27.0	11.2	41.6	29.1
Y	4	SEMICHEMICAL	26.3	9.9	42.2	31.2
Z	2	BOGUS	26.7	9.6	41.2	30.8
AA	4	SEMICHEMICAL	28.0	11.2	41.0	30.8
BB	4	SEMICHEMICAL	26.2	9.8	38.0	27.6
CC	4	SEMICHEMICAL	27.6	10.4	44.0	32.0
DD	4	SEMICHEMICAL	26.0	10.0	38.9	30.8
EE	2	BOGUS	27.6	10.8	38.6	31.6
FF	4	SEMICHEMICAL	27.5	11.0	46.7	34.6

TOTAL 116

CURRENT F.K.I. AVERAGE	26.7	10.4	42.6	31.5
CUMULATIVE F.K.I. AVERAGE	27.0	10.4	42.9	32.3
F.K.I. INDEX, PERCENT	98.9	100.0	99.3	97.5

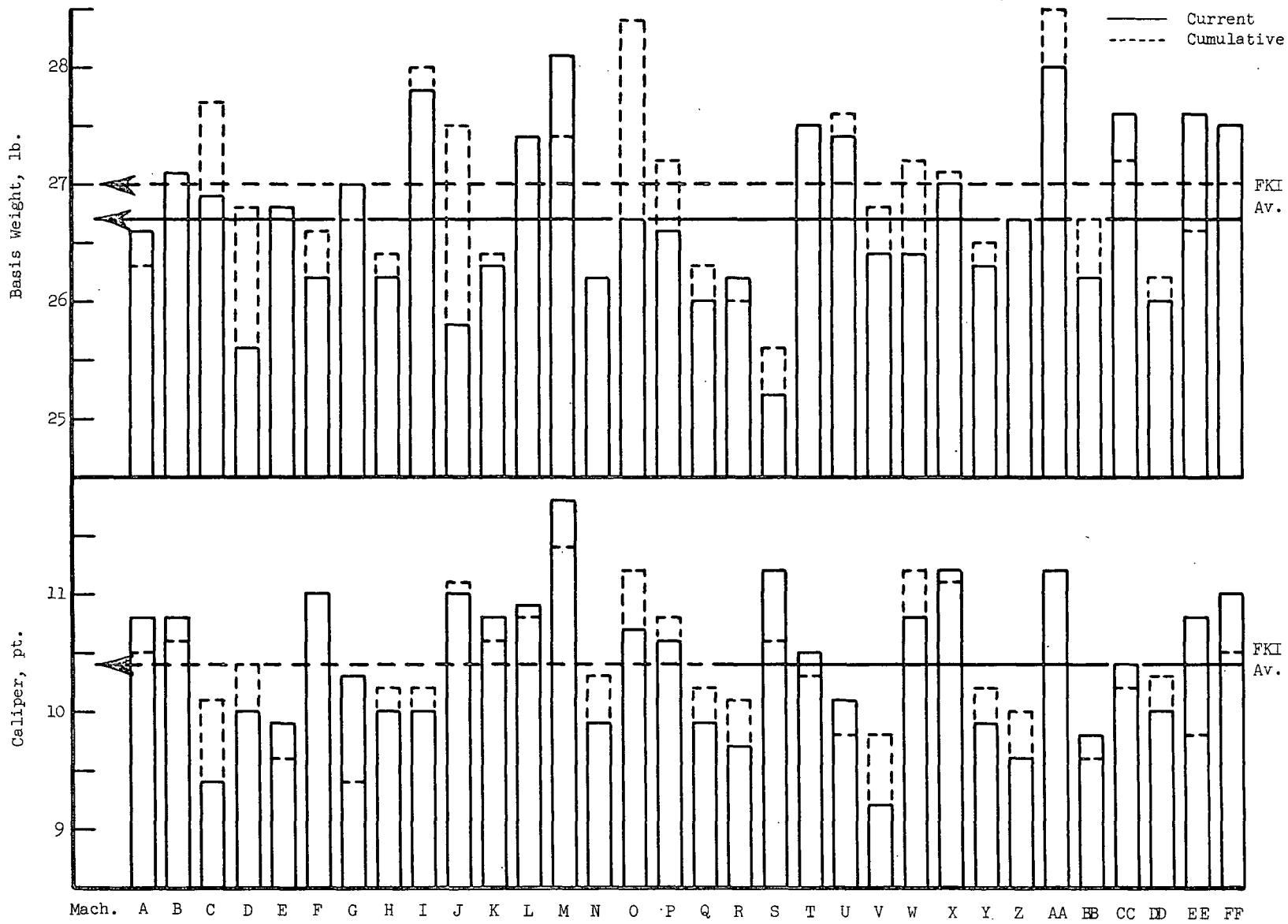
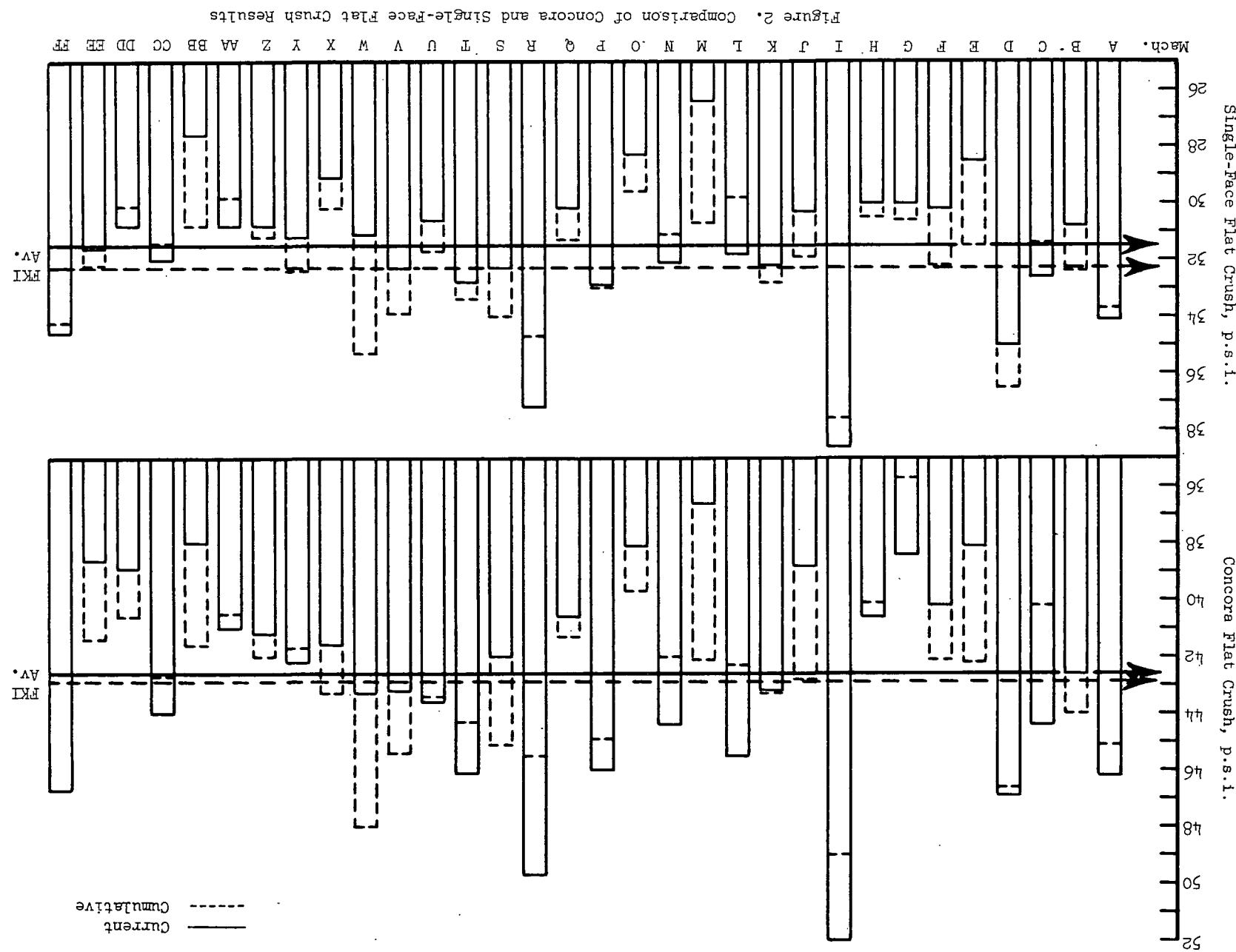


Figure 1. Comparison of Basis Weight and Caliper Results



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.

The test results obtained on the rolls submitted from the production of individual machines during the current period are shown in Tables II through XXXIII for Machines A through Z and Machines AA, BB, CC, DD, EE, and FF, 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 XXXIII 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
MARCH AND APRIL, 1969

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.			DRAW LB./IN.*A	RUNNABILITY FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
A-1	1-31-69	5423	26.1	10.5	10.0	10.1	45.6	43.2	44.3	35.8	33.8	34.8	0.5	1.562
A-2	2-3-69	5568	28.2	11.1	10.9	11.0	53.4	46.8	49.6	37.6	34.0	35.6	0.5	1.561
A-3	2-19-69	6084	27.1	11.1	10.2	10.9	49.2	45.0	46.3	35.6	31.8	34.3	0.5	1.561
A-4	2-28-69	6346	25.0	11.9	10.0	11.1	46.8	42.6	44.5	33.4	30.6	31.8	MIN.	1.565
CURRENT MACHINE AVERAGE			26.6			10.8			46.2			34.1		1.562
CUMULATIVE MACHINE AVERAGE			26.3			10.5			45.1			33.7		
MACHINE FACTOR, PERCENT			101.1			102.8			102.4			101.2		
MACHINE INDEX, PERCENT			98.5			103.8			107.7			105.6		

A Maximum tension at 600 f.p.m.

B 600 f.p.m. minimum tension.

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE B
MARCH AND APRIL, 1969

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.			DRAW LB./IN.*A	RUNNABILITY FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
B-1	4-2-69		27.4	11.0	10.5	10.9	48.6	43.8	45.7	32.8	31.8	32.4	1.5	1.566
B-2	4-3-69		26.3	11.0	10.0	10.5	43.8	39.0	42.0	32.6	30.2	31.4	1.5	1.568
B-3	4-11-69		27.4	11.2	10.6	11.0	44.4	40.2	42.0	31.6	28.8	30.4	1.5	1.564
B-4	4-12-69		27.3	11.1	10.5	11.0	46.8	37.8	40.8	29.8	28.4	29.2	1.5	1.564
CURRENT MACHINE AVERAGE			27.1			10.8			42.6			30.8		1.566
CUMULATIVE MACHINE AVERAGE			27.1			10.6			44.0			32.4		
MACHINE FACTOR, PERCENT			100.0			101.9			96.8			95.1		
MACHINE INDEX, PERCENT			100.4			103.8			99.3			95.4		

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE C

MARCH AND APRIL, 1969

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
C-1	2-17-69	2	26.5	10.1	9.2	9.8	39.6	32.4	36.0	28.6	25.6	27.4	1.0	1.570
C-2	3-12-69	3	26.7	9.1	9.0	9.0	49.2	45.6	47.3	36.6	32.0	34.9	1.5	1.575
C-3	3-18-69	4	27.4	9.7	9.0	9.4	54.0	43.8	49.8	37.0	34.4	35.5	1.5	1.571
CURRENT MACHINE AVERAGE			26.9		9.4			44.4			32.6			1.572
CUMULATIVE MACHINE AVERAGE			27.7		10.1			40.2			31.4			
MACHINE FACTOR, PERCENT			97.1		93.1			110.4			103.8			
MACHINE INDEX, PERCENT			99.6		90.4			103.5			100.9			

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE D

MARCH AND APRIL, 1969

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
D-1	2- 5-69	822	25.4	10.5	9.7	10.0	48.0	42.6	44.9	34.4	33.0	33.4	1.5	1.568
D-2	2- 6-69	823	25.1	10.8	10.0	10.3	47.4	43.2	44.8	35.0	32.6	34.0	1.0	1.567
D-3	2-14-69	824	25.7	10.0	9.1	9.7	53.4	45.6	47.6	36.2	33.2	34.8	1.5	1.568
D-4	3-27-69	825	26.2	10.1	9.2	9.9	54.0	47.4	50.4	39.0	36.6	37.7	1.5	1.560
CURRENT MACHINE AVERAGE			25.6		10.0			46.9			35.0			1.566
CUMULATIVE MACHINE AVERAGE			26.8		10.4			46.6			36.5			
MACHINE FACTOR, PERCENT			95.5		96.2			100.6			95.9			
MACHINE INDEX, PERCENT			94.8		96.2			109.3			108.4			

*See Table II for Notes A and B.

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE E
MARCH AND APRIL, 1969

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.	LBS./IN.*A	DRAW FACTOR*B
E-1	2-18-69	328	26.6	10.1	9.9	10.0	41.4	35.4	38.2	29.8	26.6	28.4	1.5	1.576
E-2	3-12-69	329	26.7	10.0	9.0	9.4	39.6	37.8	38.5	27.0	26.0	26.8	1.5	1.577
E-3	3-22-69	330	26.8	10.0	9.9	10.0	40.8	34.8	38.4	31.0	29.4	30.1	1.5	1.572
E-4	4- 5-69	331	26.9	10.2	10.0	10.1	38.4	36.0	37.4	29.8	28.0	28.8	1.5	1.569
CURRENT MACHINE AVERAGE			26.8			9.9			38.1			28.5		1.574
CUMULATIVE MACHINE AVERAGE			26.8			9.6			42.2			31.5		
MACHINE FACTOR, PERCENT			100.0			103.1			90.3			90.5		
MACHINE INDEX, PERCENT			99.2			95.2			88.8			88.2		

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE F
MARCH AND APRIL, 1969

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.	LBS./IN.*A	DRAW FACTOR*B
F-1	2-17-69	123	26.3	11.3	10.8	11.0	43.8	34.8	38.8	30.0	28.0	29.0	0.5	1.565
F-2	2-23-69	124	26.2	11.2	10.9	11.1	41.4	37.2	39.4	34.0	29.4	31.1	1.0	1.562
F-3	3- 4-69	125	26.4	11.3	10.9	11.0	39.6	36.0	38.2	32.4	29.4	30.7	1.0	1.564
F-4	3-18-69	126	26.0	11.0	10.5	10.9	48.0	40.2	44.2	32.8	28.6	30.2	1.0	1.562
CURRENT MACHINE AVERAGE			26.2			11.0			40.2			30.2		1.563
CUMULATIVE MACHINE AVERAGE			26.6			11.0			42.1			32.2		
MACHINE FACTOR, PERCENT			98.5			100.0			95.5			93.8		
MACHINE INDEX, PERCENT			97.0			105.8			93.7			93.5		

*See Table II for Notes A and B.

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE G
MARCH AND APRIL, 1969

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
G-1	2- 3-69	B-1	27.0	11.1	9.5	10.3	39.0	33.0	36.6	30.2	29.0	29.6	1.5	1.570
G-2	2- 3-69	B-2	27.0	11.0	10.0	10.3	43.2	36.6	40.1	31.0	29.4	30.5	1.5	1.572
CURRENT MACHINE AVERAGE			27.0			10.3			38.4			30.0		1.571
CUMULATIVE MACHINE AVERAGE			26.7			9.4			35.7			30.6		
MACHINE FACTOR, PERCENT			101.1			109.6			107.6			98.0		
MACHINE INDEX, PERCENT			100.0			99.0			89.5			92.9		

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE H
MARCH AND APRIL, 1969

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
H-1	3-18-69	193	26.1	10.0	9.9	10.0	42.0	39.0	40.7	31.2	28.8	30.2	1.5	1.570
H-2	3-18-69	194	26.3	10.0	9.9	10.0	43.2	37.8	40.6	30.6	28.4	29.7	1.5	1.573
CURRENT MACHINE AVERAGE			26.2			10.0			40.6			30.0		1.572
CUMULATIVE MACHINE AVERAGE			26.4			10.2			40.1			30.5		
MACHINE FACTOR, PERCENT			99.2			98.0			101.2			98.4		
MACHINE INDEX, PERCENT			97.0			96.2			94.6			92.9		

*See Table II for Notes A and B.

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE I
MARCH AND APRIL, 1969

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	1- 4-69	698	27.5	10.0	8.9	9.5	57.6	49.2	52.3	43.2	37.8	40.0	1.5	1.566
I-2	1-27-69	699	27.8	10.0	9.1	9.7	55.2	49.2	51.7	40.0	37.0	38.4	1.5	1.567
I-3	2-16-69	700	28.1	11.0	10.0	10.5	53.4	45.0	49.6	38.2	33.8	35.9	1.5	1.573
I-4	2-24-69	701	28.0	10.9	10.0	10.4	57.0	50.4	54.2	41.8	38.8	40.2	1.5	1.572
CURRENT MACHINE AVERAGE			27.8			10.0			52.0			38.6		1.570
CUMULATIVE MACHINE AVERAGE			28.0			10.2			49.0			37.6		
MACHINE FACTOR, PERCENT			99.3			98.0			106.1			102.6		
MACHINE INDEX, PERCENT			103.0			96.2			121.2			119.5		

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE J
MARCH AND APRIL, 1969

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	3-10-69	126	26.5	12.3	11.2	11.9	42.0	34.8	39.7	32.0	30.0	31.0	0.5	1.565
J-2	3-10-69	129	25.2	10.5	10.0	10.1	40.2	33.0	37.8	30.6	29.0	29.6	1.0	1.562
CURRENT MACHINE AVERAGE			25.8			11.0			38.8			30.3		1.564
CUMULATIVE MACHINE AVERAGE			27.5			11.1			42.8			31.9		
MACHINE FACTOR, PERCENT			93.8			99.1			90.6			95.0		
MACHINE INDEX, PERCENT			95.6			105.8			90.4			93.8		

*See Table II for Notes A and B.

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE K

MARCH AND APRIL, 1969

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	3- 2-69	171	26.5	11.0	10.5	10.8	46.2	41.4	44.4	35.2	33.2	34.1	0.5	1.556
K-2	3- 7-69	759	27.1	11.1	10.7	10.9	49.8	42.6	47.5	35.6	34.6	35.0	0.5	1.558
K-3	3-20-69	2186	25.8	10.9	10.2	10.7	42.0	38.4	40.1	30.4	28.4	29.3	1.5	1.563
K-4	4- 4-69	376	25.8	10.9	10.0	10.6	44.4	37.2	40.8	31.4	29.2	30.5	1.5	1.571
CURRENT MACHINE AVERAGE			26.3	10.8			43.2			32.2			1.562	
CUMULATIVE MACHINE AVERAGE			26.4	10.6			43.3			32.8				
MACHINE FACTOR, PERCENT			99.6	101.9			99.8			98.2				
MACHINE INDEX, PERCENT			97.4	103.8			100.7			99.7				

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE L

MARCH AND APRIL, 1969

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	12-19-68	1965	26.5	11.1	10.5	10.9	49.2	40.8	44.6	32.6	29.0	31.1	1.0	1.556
L-2	2-11-69	1984	27.4	11.1	10.8	11.0	43.8	40.8	42.1	31.0	28.2	29.6	1.5	1.567
L-3	3-19-69	1991	27.9	11.1	10.6	10.9	48.0	45.0	47.2	33.8	32.0	32.9	1.5	1.565
L-4	3-19-69	1992	27.8	11.0	10.7	10.9	50.4	45.0	48.0	35.2	32.2	33.4	1.5	1.564
CURRENT MACHINE AVERAGE			27.4	10.9			45.5			31.8			1.563	
CUMULATIVE MACHINE AVERAGE			27.4	10.8			42.3			29.8				
MACHINE FACTOR, PERCENT			100.0	100.9			107.6			106.7				
MACHINE INDEX, PERCENT			101.5	104.8			106.1			98.4				

*See Table II for Notes A and B.

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE M

MARCH AND APRIL, 1969

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	2- 5-69	176	27.8	12.1	11.5	11.9	40.8	34.2	36.7	26.8	24.2	26.0	NOTE C	1.558
M-2	2-12-69	177	28.4	12.0	11.2	11.6	43.8	37.2	40.6	31.2	26.8	28.6	NOTE D	1.558
M-3	3-25-69	181	28.2	12.0	11.1	11.5	39.0	31.2	34.2	26.2	24.0	25.0	NOTE E	1.553
M-4	4- 2-69	182	28.1	12.5	11.3	12.0	40.2	30.6	34.9	26.4	25.2	25.8	NOTE F	1.554
CURRENT MACHINE AVERAGE			28.1	11.8			36.6			26.4			1.556	
CUMULATIVE MACHINE AVERAGE			27.4	11.4			42.1			30.7				
MACHINE FACTOR, PERCENT			102.6	103.5			86.9			86.0				
MACHINE INDEX, PERCENT			104.1	113.5			85.3			81.7				

*See Table II for Notes A and B.

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

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

E Maximum speed at which this roll could be corrugated at minimum tension was 550 f.p.m.

F Maximum speed at which this roll could be corrugated at minimum tension was 125 f.p.m.

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE N

MARCH AND APRIL, 1969

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	2-28-69	13193	26.0	10.2	9.5	9.9	44.4	40.2	42.7	36.4	29.8	32.9	1.5	1.574
N-2	3-12-69	5451	26.2	10.2	9.5	9.9	48.6	41.4	44.4	32.2	30.8	31.6	1.5	1.574
N-3	3-12-69	5463	26.0	10.0	9.0	9.6	49.8	40.8	46.1	33.6	31.4	32.3	1.5	1.574
N-4	4- 4-69	2041	26.4	10.3	9.8	10.1	46.8	42.0	44.4	32.8	30.4	31.5	1.5	1.572
CURRENT MACHINE AVERAGE			26.2	9.9			44.4			32.1			1.574	
CUMULATIVE MACHINE AVERAGE			26.2	10.3			42.0			31.1				
MACHINE FACTOR, PERCENT			100.0	96.1			105.7			103.2				
MACHINE INDEX, PERCENT			97.0	95.2			103.5			99.4				

*See Table II for Notes A and B.

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE O
MARCH AND APRIL, 1969

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 FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
O-1	1-31-69	4743	27.4	11.3	10.8	11.0	43.8	40.2	41.6	31.4	29.4	30.3	1.5	1.568
O-2	2- 7-69	4602	25.6	11.1	10.2	10.7	39.0	34.2	36.2	28.6	28.0	28.3	1.5	1.568
O-3	3-16-69	4193	27.1	11.0	10.0	10.7	39.0	34.8	37.4	29.4	26.4	27.8	1.5	1.569
O-4	3-21-69	4491	26.6	10.8	10.0	10.3	39.6	33.6	37.1	27.6	26.2	26.7	1.5	1.568
CURRENT MACHINE AVERAGE			26.7			10.7			38.1			28.3		1.568
CUMULATIVE MACHINE AVERAGE			28.4			11.2			39.7			29.6		
MACHINE FACTOR, PERCENT			94.0			95.5			96.0			95.6		
MACHINE INDEX, PERCENT			98.9			102.9			88.8			87.6		

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE P
MARCH AND APRIL, 1969

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 FACTOR*B
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
P-1	1-31-69	14	27.5	10.4	9.8	10.1	52.8	48.0	50.0	38.2	35.6	37.0	1.5	1.569
P-2	3-12-69	15	26.5	11.2	10.8	11.0	46.8	40.2	42.4	31.6	29.0	30.2	1.5	1.566
P-3	3-12-69	16	26.5	11.3	10.8	11.0	46.8	40.8	43.6	32.0	29.0	30.5	1.5	1.568
P-4	3-27-69	17	25.7	10.7	9.8	10.1	50.4	46.2	48.1	34.8	32.6	34.0	1.5	1.572
CURRENT MACHINE AVERAGE			26.6			10.6			46.0			32.9		1.569
CUMULATIVE MACHINE AVERAGE			27.2			10.8			44.9			33.0		
MACHINE FACTOR, PERCENT			97.8			98.1			102.4			99.7		
MACHINE INDEX, PERCENT			98.5			101.9			107.2			101.8		

*See Table II for Notes A and B.

TABLE XVIII
SUMMARY OF TEST RESULTS FOR MACHINE Q
MARCH AND APRIL, 1969

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 LB./IN.*A FACTOR*B	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
Q-1	2-11-69	44	25.8	10.9	9.8	10.2	47.4	35.4	40.3	29.4	27.0	28.3	1.5	1.570
Q-2	2-28-69	46	27.1	10.0	9.0	9.8	48.0	40.2	45.6	36.6	33.2	34.8	1.5	1.567
Q-3	3-13-69	48	24.6	10.0	9.1	9.8	41.4	36.6	39.7	31.0	28.2	29.7	1.5	1.565
Q-4	3-29-69	50	26.3	10.2	9.0	9.7	40.2	32.4	36.7	28.8	27.4	27.9	1.5	1.565
CURRENT MACHINE AVERAGE			26.0				9.9			40.6			30.2	1.567
CUMULATIVE MACHINE AVERAGE			26.3				10.2			41.3			31.3	
MACHINE FACTOR, PERCENT			98.8				97.0			98.3			96.5	
MACHINE INDEX, PERCENT			96.3				95.2			94.6			93.5	

TABLE XIX
SUMMARY OF TEST RESULTS FOR MACHINE R
MARCH AND APRIL, 1969

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 LB./IN.*A FACTOR*B	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.		
R-1	2-13-69	568	26.7	10.1	9.0	9.6	51.6	44.4	49.2	37.6	36.8	37.2	1.5	1.565
R-2	2-21-69	569	26.0	10.1	9.0	9.6	52.8	46.8	49.6	37.2	36.0	36.6	1.5	1.568
R-3	3-5-69	570	26.0	10.5	9.0	9.9	51.6	46.8	48.2	37.8	36.4	37.2	1.5	1.568
R-4	3-26-69	572	26.2	10.1	9.0	9.7	54.0	48.0	51.7	39.0	37.2	37.7	0.5	1.560
CURRENT MACHINE AVERAGE			26.2				9.7			49.7			37.2	1.565
CUMULATIVE MACHINE AVERAGE			26.0				10.1			45.5			34.7	
MACHINE FACTOR, PERCENT			100.8				96.0			109.2			107.2	
MACHINE INDEX, PERCENT			97.0				93.3			115.8			115.2	

*See Table II for Notes A and B.

TABLE XX
SUMMARY OF TEST RESULTS FOR MACHINE S
MARCH AND APRIL, 1969.

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	2-19-69	25	24.4	11.3	10.6	11.0	45.6	37.2	40.8	32.8	28.4	30.7	0.5	1.556
S-2	3- 1-69	26	25.3	11.9	11.0	11.5	46.2	38.4	43.4	33.8	32.2	32.9	1.5	1.563
S-3	3- 3-69	27	25.8	11.1	10.8	11.0	45.0	38.4	41.9	34.2	32.6	33.4	1.5	1.563
CURRENT MACHINE AVERAGE				25.2				11.2				42.0	32.3	
CUMULATIVE MACHINE AVERAGE				25.6				10.6				45.1	34.0	
MACHINE FACTOR, PERCENT				98.4				105.7				93.1	95.0	
MACHINE INDEX, PERCENT				93.3				107.7				97.9	100.0	

TABLE XXI
SUMMARY OF TEST RESULTS FOR MACHINE T
MARCH AND APRIL, 1969.

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	1- 9-69	658	27.7	10.9	10.1	10.6	46.8	43.2	44.2	34.6	28.4	31.6	1.5	1.571
T-2	1-22-69	659	27.7	10.9	10.2	10.6	52.2	43.2	46.0	35.2	33.0	33.9	1.5	1.569
T-3	2- 5-69	660	27.4	10.9	10.0	10.2	51.6	43.8	48.0	33.8	32.8	33.2	1.5	1.571
T-4	2-19-69	661	27.1	11.0	10.1	10.6	48.6	44.4	46.1	36.4	29.6	32.4	1.5	1.572
CURRENT MACHINE AVERAGE				27.5				10.5				46.1	32.8	
CUMULATIVE MACHINE AVERAGE				27.5				10.3				44.3	33.4	
MACHINE FACTOR, PERCENT				100.0				101.9				104.1	98.2	
MACHINE INDEX, PERCENT				101.8				101.0				107.4	101.5	

*See Table II for Notes A and B.

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE U
MARCH AND APRIL, 1969

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	2-21-69	232	27.1	10.0	9.7	9.9	46.2	41.4	44.3	35.4	30.8	32.8	1.5	1.565
U-2	2-24-69	233	28.4	10.1	9.8	10.0	48.6	42.6	46.2	34.2	30.6	32.3	1.5	1.567
U-3	3-7-69	236	27.1	10.9	10.0	10.2	42.0	39.0	40.9	28.4	26.4	27.3	1.5	1.565
U-4	3-25-69	238	26.8	10.9	10.0	10.4	45.6	40.2	43.1	30.4	29.2	29.8	1.5	1.567
CURRENT MACHINE AVERAGE			27.4			10.1			43.6			30.6		1.566
CUMULATIVE MACHINE AVERAGE			27.6			9.8			43.4			31.7		
MACHINE FACTOR, PERCENT			99.3			103.1			100.5			96.5		
MACHINE INDEX, PERCENT			101.5			97.1			101.6			94.7		

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE V
MARCH AND APRIL, 1969

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	4-9-69		26.8	9.8	9.0	9.2	45.6	40.2	43.1	33.6	32.4	33.0	1.5	1.567
V-2	4-10-69		26.0	9.3	9.0	9.1	45.0	42.6	44.2	34.0	32.4	33.0	1.5	1.570
V-3	4-11-69		26.3	9.5	9.0	9.2	48.0	39.0	43.3	33.6	31.6	32.4	1.5	1.567
V-4	4-12-69		26.5	9.3	9.0	9.1	44.4	39.0	42.2	32.4	30.2	30.9	1.5	1.565
CURRENT MACHINE AVERAGE			26.4			9.2			43.2			32.3		1.567
CUMULATIVE MACHINE AVERAGE			26.8			9.8			45.4			33.9		
MACHINE FACTOR, PERCENT			98.5			93.9			95.2			95.3		
MACHINE INDEX, PERCENT			97.8			88.5			100.7			100.0		

*See Table II for Notes A and B.

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE W
MARCH AND APRIL, 1969

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	2-25-69	6694	26.0	10.7	10.0	10.4	51.0	37.8	42.6	31.2	28.4	29.8	1.5	1.568
W-2	3- 7-69	1581	26.5	11.0	10.5	10.8	47.4	39.6	42.7	30.8	29.2	30.1	0.5	1.565
W-3	3-28-69	6769	26.5	10.9	10.3	10.6	45.6	42.6	44.6	32.8	29.8	31.4	0.5	1.567
W-4	4- 5-69	1001	26.8	11.8	11.0	11.3	46.2	40.8	43.3	34.4	32.4	33.1	1.0	1.563
CURRENT MACHINE AVERAGE			26.4			10.8			43.3			31.1		1.566
CUMULATIVE MACHINE AVERAGE			27.2			11.2			48.0			35.3		
MACHINE FACTOR, PERCENT			97.0			96.4			90.2			88.1		
MACHINE INDEX, PERCENT			97.8			103.8			100.9			96.3		

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE X

MARCH AND APRIL, 1969

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	2-27-69	11081	26.8	11.0	10.0	10.7	43.2	37.2	40.3	32.0	29.2	30.2	1.5	1.574
X-2	3-15-69	6642	27.4	12.0	11.1	11.4	46.2	41.4	43.4	29.2	28.0	28.7	1.5	1.572
X-3	3-15-69	6652	27.1	12.0	11.0	11.6	45.0	38.4	41.8	30.8	28.4	29.7	1.5	1.570
X-4	3-26-69	11092	26.6	11.8	11.0	11.3	43.2	39.0	40.9	28.6	27.0	27.8	1.5	1.574
CURRENT MACHINE AVERAGE			27.0			11.2			41.6			29.1		1.573
CUMULATIVE MACHINE AVERAGE			27.1			11.1			43.3			30.2		
MACHINE FACTOR, PERCENT			99.6			100.9			96.1			96.4		
MACHINE INDEX, PERCENT			100.0			107.7			97.0			90.1		

*See Table II for Notes A and B.

TABLE XXVI
SUMMARY OF TEST RESULTS FOR MACHINE Y
MARCH AND APRIL, 1969

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	2-17-69	799	26.3	10.3	9.0	9.6	45.0	40.8	42.6	33.8	31.8	32.8	1.5	1.570
Y-2	3-9-69	800	26.5	10.9	10.0	10.2	48.6	42.0	45.8	34.6	31.6	33.2	1.5	1.575
Y-3	3-14-69	801	26.2	10.2	9.5	9.9	41.4	36.6	38.5	29.6	27.2	28.2	1.5	1.573
Y-4	4-2-69	802	26.2	10.5	9.8	10.0	45.0	37.8	41.8	31.8	29.6	30.5	1.5	1.572
CURRENT MACHINE AVERAGE				26.3			9.9			42.2			31.2	
CUMULATIVE MACHINE AVERAGE				26.5			10.2			41.7			32.4	
MACHINE FACTOR, PERCENT				99.2			97.0			101.2			96.3	
MACHINE INDEX, PERCENT				97.4			95.2			98.4			96.6	

TABLE XXVII
SUMMARY OF TEST RESULTS FOR MACHINE Z
MARCH AND APRIL, 1969

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
Z-1	2-17-69	424	26.3	10.0	9.2	9.8	39.6	36.0	38.2	29.8	28.4	29.0	1.5	1.576
Z-2		425	27.1	10.0	8.9	9.4	46.8	42.6	44.3	34.0	32.0	32.7	1.5	1.577
CURRENT MACHINE AVERAGE				26.7			9.6			41.2			30.8	
CUMULATIVE MACHINE AVERAGE				26.7			10.0			42.0			31.2	
MACHINE FACTOR, PERCENT				100.0			96.0			98.1			98.7	
MACHINE INDEX, PERCENT				98.9			92.3			96.0			95.4	

*See Table II for Notes A and B.

TABLE XXVIII
SUMMARY OF TEST RESULTS FOR MACHINE AA
MARCH AND APRIL, 1969

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	1- 8-69	3621	29.1	12.0	11.0	11.4	49.8	40.2	43.3	34.0	32.2	33.2	1.5	1.562
AA-2	1-31-69	3731	28.7	11.9	11.1	11.4	47.4	43.8	45.4	35.2	32.6	34.2	1.5	1.565
AA-3	3- 5-69	3131	27.6	11.9	10.9	11.3	44.4	35.4	38.2	27.2	25.4	26.5	1.5	1.569
AA-4	3-15-69	3091	26.8	11.1	10.3	10.9	37.8	34.8	37.0	31.0	27.8	29.5	1.5	1.566
CURRENT MACHINE AVERAGE			28.0			11.2			41.0			30.8		1.566
CUMULATIVE MACHINE AVERAGE			28.5			11.2			40.5			29.8		
MACHINE FACTOR, PERCENT			98.2			100.0			101.2			103.4		
MACHINE INDEX, PERCENT			103.7			107.7			95.6			95.4		

TABLE XXIX
SUMMARY OF TEST RESULTS FOR MACHINE BB
MARCH AND APRIL, 1969

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	2-18-69	328	26.8	10.9	10.0	10.4	43.8	39.0	41.8	30.0	28.0	28.8	1.5	1.576
BB-2	3-13-69	329	26.1	10.0	9.3	9.8	40.8	38.4	39.8	29.0	26.8	27.6	1.5	1.575
BB-3	3-22-69	330	26.8	10.2	9.8	10.0	45.6	40.8	42.5	33.6	31.2	32.5	1.5	1.573
BB-4	4- 4-69	331	25.1	9.0	8.2	8.8	29.4	25.8	27.8	22.4	21.0	21.7	1.5	1.576
CURRENT MACHINE AVERAGE			26.2			9.8			38.0			27.6		1.575
CUMULATIVE MACHINE AVERAGE			26.7			9.6			41.6			30.8		
MACHINE FACTOR, PERCENT			98.1			102.1			91.3			89.6		
MACHINE INDEX, PERCENT			97.0			94.2			88.6			85.4		

*See Table II for Notes A and B.

TABLE XXX

SUMMARY OF TEST RESULTS FOR MACHINE CC

MARCH AND APRIL, 1969

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
CC-1	2- 6-69	231	27.9	9.9	9.0	9.6	48.0	41.4	45.2	33.6	30.6	32.5	1.5	1.563
CC-2	2-26-69	234	26.8	10.2	9.9	10.0	51.0	40.2	44.0	31.8	29.4	30.8	1.5	1.568
CC-3	3- 1-69	235	27.7	11.5	10.0	10.9	47.4	39.0	42.7	33.0	30.2	32.0	1.0	1.560
CC-4	3- 8-69	237	28.0	11.4	10.7	11.0	47.4	39.6	44.0	33.8	31.0	32.7	1.5	1.570
CURRENT MACHINE AVERAGE			27.6				10.4			44.0		32.0		1.565
CUMULATIVE MACHINE AVERAGE			27.2				10.2			42.7		31.4		
MACHINE FACTOR, PERCENT			101.5				102.0			103.0		101.9		
MACHINE INDEX, PERCENT			102.2				100.0			102.6		99.1		

TABLE XXXI

SUMMARY OF TEST RESULTS FOR MACHINE DD

MARCH AND APRIL, 1969

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
DD-1	2-14-69	43	25.5	10.9	9.0	10.1	39.0	33.0	36.5	30.6	26.2	28.4	1.5	1.560
DD-2	2-28-69	45	25.5	11.0	10.0	10.6	42.0	34.2	36.7	31.0	27.6	29.4	1.5	1.567
DD-3	3-12-69	47	26.1	9.9	8.9	9.4	43.8	38.4	41.3	34.2	32.4	33.2	1.5	1.562
DD-4	3-27-69	49	26.7	10.7	8.9	9.9	43.8	38.4	41.0	32.8	31.0	32.0	1.5	1.566
CURRENT MACHINE AVERAGE			26.0				10.0			38.9		30.8		1.564
CUMULATIVE MACHINE AVERAGE			26.2				10.3			40.6		30.1		
MACHINE FACTOR, PERCENT			99.2				97.1			95.8		102.3		
MACHINE INDEX, PERCENT			96.3				96.2			90.7		95.4		

*See Table II for Notes A and B.

TABLE XXXII
SUMMARY OF TEST RESULTS FOR MACHINE EE
MARCH AND APRIL, 1969

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	
				MAX.	MIN.	AV.	MAX.	MIN.	AV.	MAX.	MIN.	AV.	LB./IN.*A	DRAW FACTOR*B
EE-1	2-25-69	524	27.8	11.0	10.0	10.6	37.2	34.8	36.5	31.2	29.0	30.0	1.5	1.570
EE-2	2-28-69	525	27.4	11.3	10.4	10.9	43.2	38.4	40.6	34.6	32.4	33.2	1.5	1.574
CURRENT MACHINE AVERAGE			27.6				10.8			38.6			31.6	
CUMULATIVE MACHINE AVERAGE			26.6				9.8			41.4			32.2	
MACHINE FACTOR, PERCENT			103.8				110.2			93.2			98.1	
MACHINE INDEX, PERCENT			102.2				103.8			90.0			97.8	

TABLE XXXIII
SUMMARY OF TEST RESULTS FOR MACHINE FF
MARCH AND APRIL, 1969

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
FF-1	3- 4-69		27.1	11.2	10.9	11.0	48.0	43.8	45.8	34.6	31.8	33.4	0.5	1.559
FF-2	3- 5-69		27.6	11.2	11.0	11.0	46.2	42.0	44.3	35.0	31.8	32.7	MIN.	1.561
FF-3	4- 2-69		27.6	11.9	10.9	11.1	52.2	46.2	48.4	37.0	34.4	36.3	1.5	1.567
FF-4	4- 3-69		27.6	11.2	10.7	11.0	50.4	46.8	48.4	37.2	34.4	35.8	1.5	1.566
CURRENT MACHINE AVERAGE			27.5				11.0			46.7			34.6	
CUMULATIVE MACHINE AVERAGE			27.0				10.5			46.7			34.2	
MACHINE FACTOR, PERCENT			101.8				104.8			100.0			101.2	
MACHINE INDEX, PERCENT			101.8				105.8			108.8			107.1	

*See Table II for Notes A and B.

No data available.
 MLL data were not obtained on specimens tested immediately after flattening.
 by the Institute current machine average and multityping by 100.
 Average difference (percent) is computed by dividing the average difference in p.s.i.
 results used as the reference.
 Institute test results and that based on MLL test results with the Institute test
 Average difference is the difference between the current machine average based on
 data were submitted.
^aComparisons based on current machine average include only those rolls for which MLL
 data were submitted.

Machine	No. of Rolls	I.P.G.	MLL	Av. a	Av. b	Diffr. a	Av. Diffr., %c	Current	Previous	Code
CONGO RA FLAT CRUSH, P.S.I.										
A B C	4	46.2	43.2	-3.0	-6.5	-0.2	-0.2	46.9	36.9d	O
D	3	42.6	43.7	+1.1	+2.6	+2.6	0.0	44.4	43.2	-1.2
E F G H	3	38.8	38.7	-0.1	-0.3	-6.2	-1.2	38.4	36.0	-2.4
I J K L	0	52.0	42.4d	-7.4	-7.4	-0.4	-0.4	52.0	42.4	-0.8
M N O P	4	36.6	36.2	-0.4	-1.1	-1.0	-1.0	44.4	34.7	-3.4
Q R S T	0	40.6	30.3d	-	-	-	-	49.7	36.9d	-0.7
U V W X	4	43.6	42.4	-1.2	-2.8	-3.6	-3.6	43.2	41.9	-1.3
Y Z AA BB	4	42.2	40.6	-1.6	-1.6	-1.6	-1.6	42.2	41.2	-1.0
Z Y AA BB	3	40.6	40.6	-	-	-	-	42.2	42.4	-
EE DD CC	4	41.0	42.8	-1.2	-2.7	-2.7	-2.7	41.0	35.1d	-6.4
EE DD CC	0	38.9	38.9	-	-	-	-	38.9	38.6	-
FT	4	46.7	46.7	0.0	0.0	0.0	0.0	46.7	46.7	+0.2

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

TABLE XXXIV

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 116 rolls evaluated during the current period and the 117 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 XXXIII for Machines A through Z and Machines AA, BB, CC, DD, EE, and FF, respectively.

In Table XXXIV, 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 averages 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 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.

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