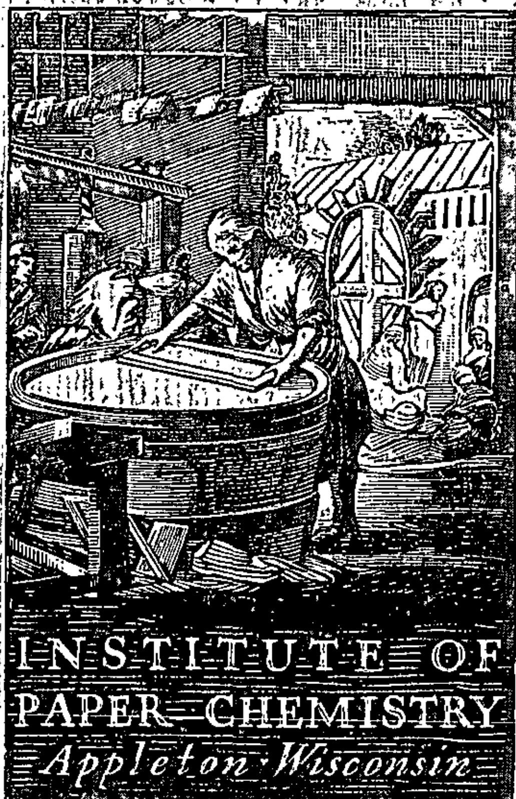


CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Progress Report Nineteen

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

July 1, 1957

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

The purpose of this study is to provide a continuous evaluation of the quality and runability of corrugating medium produced by members of the Fourdrinier Kraft Board Institute. The study, as it progresses, will accumulate a backlog of data and experience which will provide two important benefits. First, it will enable each participant to evaluate his position in relation to the rest of the industry. Second, it will provide information essential for the interpretation of any proposed specifications on corrugating medium (on either a company or industry basis).

The procedure for participating in this study involves the submission of two rolls of corrugating medium per week from each machine to The Institute of Paper Chemistry. These rolls are taken from regular production runs on different days. Each roll is 10 to 12 inches wide and contains approximately 2,500 lineal feet of medium (approximately 20 inches in diameter). Each roll as it is received by the Institute is assigned a code letter and number. The rolls are numbered in the sequence in which they are received. Code letters are assigned on the basis of machines and a given machine is assigned a different code letter each month in order to mask the identity of the mills. For purposes of reference, a copy of the outline of the program together with the necessary instructions for sampling was appended to Progress Report One in this series.

During the month of June, fifty-six different sample lots of corrugating medium, submitted from the production of thirteen machines, were evaluated at The Institute of Paper Chemistry. A tabulation of the samples classified according to machines may be seen in Table I.

TABLE I

DISTRIBUTION OF CORRUGATING MEDIUM SAMPLES

Machine Code	Number of Samples
A	2
B	0
C	3
D	7
E	4
F	3
G	7
H	6
I	2
J	4
K	7
L	4
M	2
N	5
Total	56

Each sample of corrugating medium was evaluated for basis weight, caliper, Concora flat crush, H. and D. flat crush (single-faced board), and runability. Runability was measured by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with 1/2 lb. per inch tension. If satisfactory runability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runability was obtained (no ruptured flutes). If the medium fabricated satisfactorily at 600 f.p.m. with 1/2 lb. per inch tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 1.0 lb. per inch and 1.5 lb. per inch.

Flat crush was determined on the board obtained at the highest speed using 1/2 lb. per inch tension. These results will provide data which may be useful in studying the relationship between Concora flat crush and combined board flat crush for each participant's medium.

As requested by members of the F.K.B.I., the Concora medium test results are calculated on the basis of pounds of load per unit area rather than on the basis of the formula suggested by the Concora manufacturer and are reported as Concora flat crush test results. In Progress Reports One and Two, the Concora medium test results were reported on the basis of the formula suggested by the Concora manufacturer.

The average test results obtained on the samples of corrugating medium submitted by each participant are shown in Table II and graphically presented in Figures 1 to 4. In addition to a comparison of the test data obtained for the various machines, Table II also presents the current F.K.I. averages, cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average is the average test result for all machines participating in the study during a given month. The cumulative F.K.I. average is based on the results for the previous twelve-month period excluding the result for the current period. The F.K.I. index is obtained as follows:

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

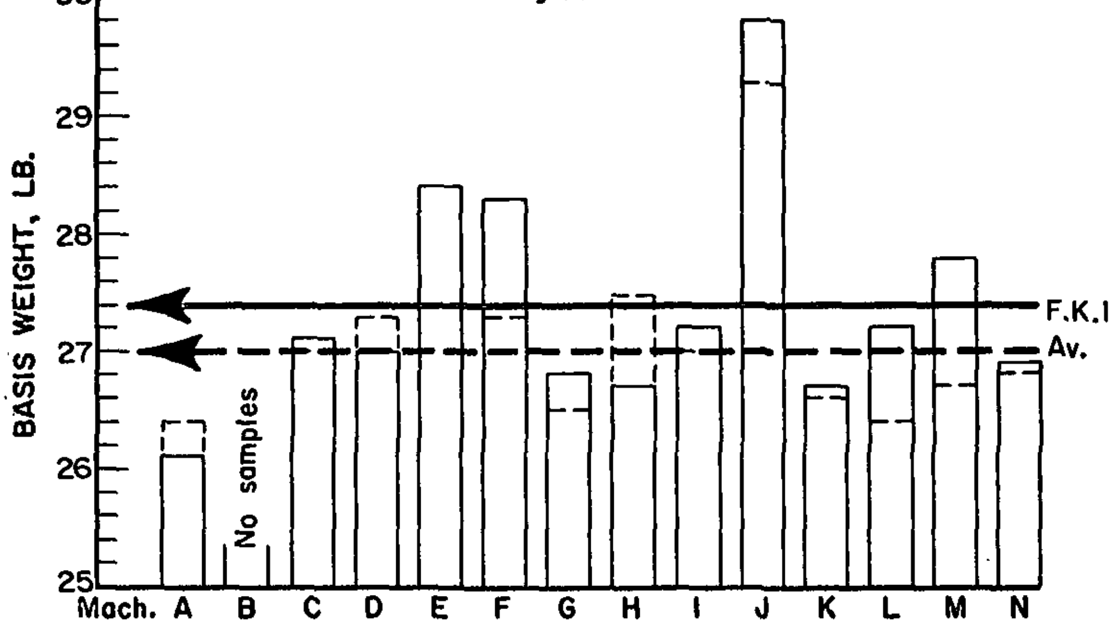
The F.K.I. index provides a ready means of comparing the current quality with previous results. An index greater than 100% indicates that current quality is higher than the average result for the previous twelve periods; an index below 100% indicates that current quality is lower than the average result for the previous twelve periods.

TABLE II

SUMMARY OF CURRENT MACHINE AVERAGES
June, 1957

Mill Code	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-face Flat Crush, p.s.i.
A	26.1	10.0	31.0	31.2
B	No samples submitted.			
C	27.1	10.1	40.7	42.7
D	27.0	10.6	35.8	36.7
E	28.4	9.6	37.6	41.2
F	28.3	9.8	26.0	26.8
G	26.8	11.1	38.0	40.0
H	26.7	9.9	37.1	39.2
I	27.2	11.1	38.2	38.9
J	29.8	11.6	35.4	36.9
K	26.7	10.7	40.4	40.8
L	27.2	9.3	37.2	37.9
M	27.8	10.2	37.8	39.3
N	26.9	10.3	37.5	38.0
Current F.K.I. Average	27.4	10.3	36.4	37.7
Cumulative F.K.I. Average	27.0	10.3	34.3	35.6
F.K.I. Index, %	101.6	100.0	106.0	105.7

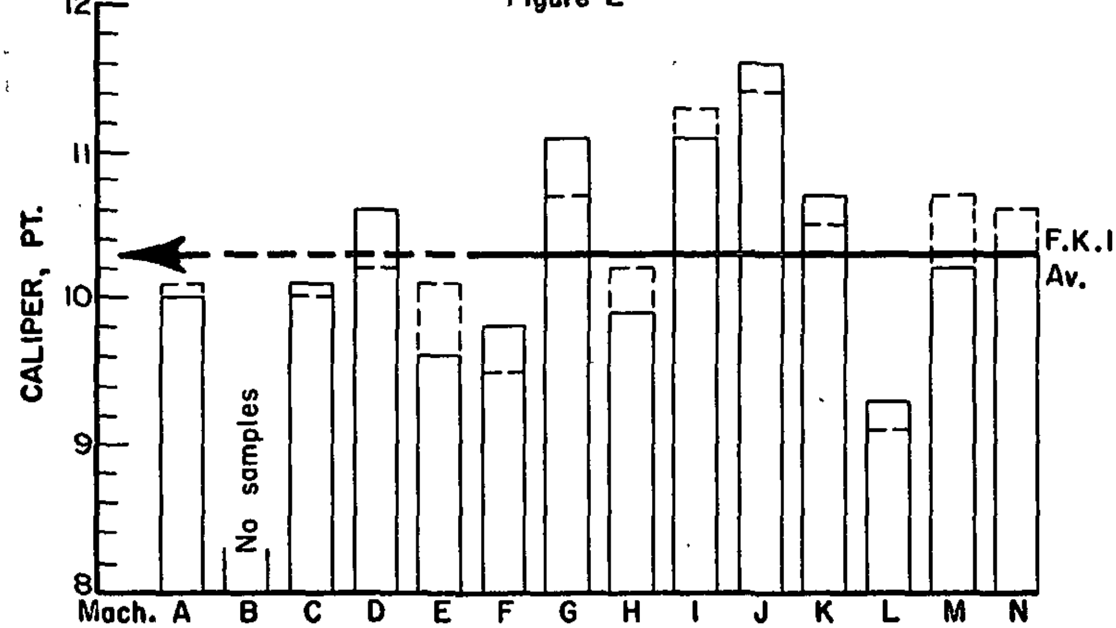
Figure 1



COMPARISON OF BASIS WEIGHT RESULTS

June, 1957

Figure 2



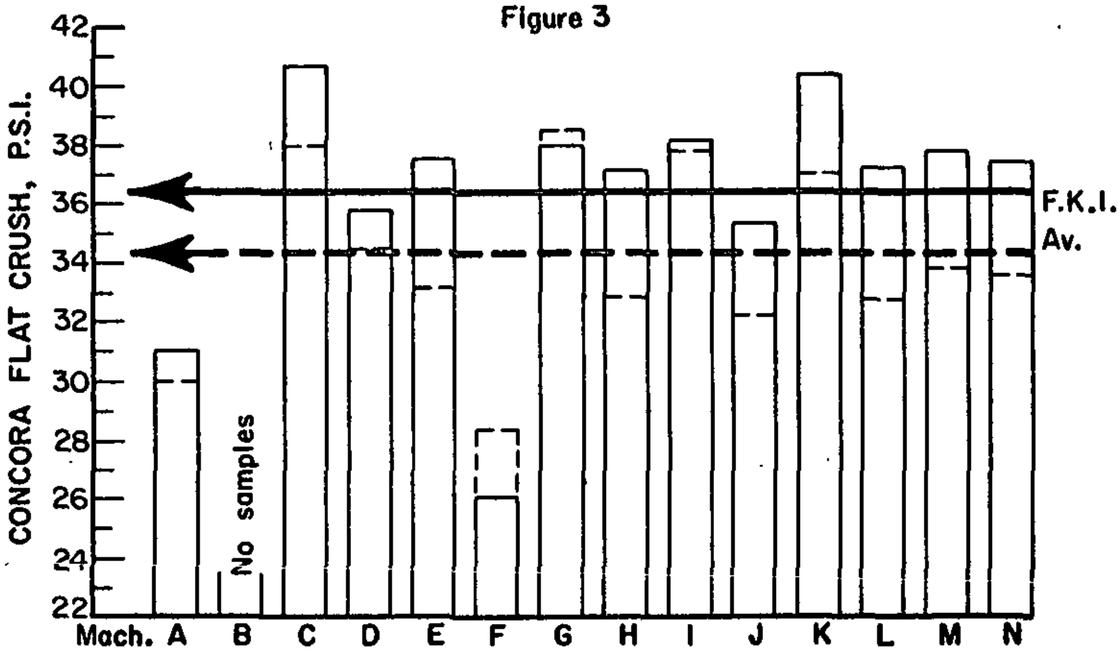
COMPARISON OF CALIPER RESULTS

June, 1957

——— Current machine average

- - - - Cumulative machine average

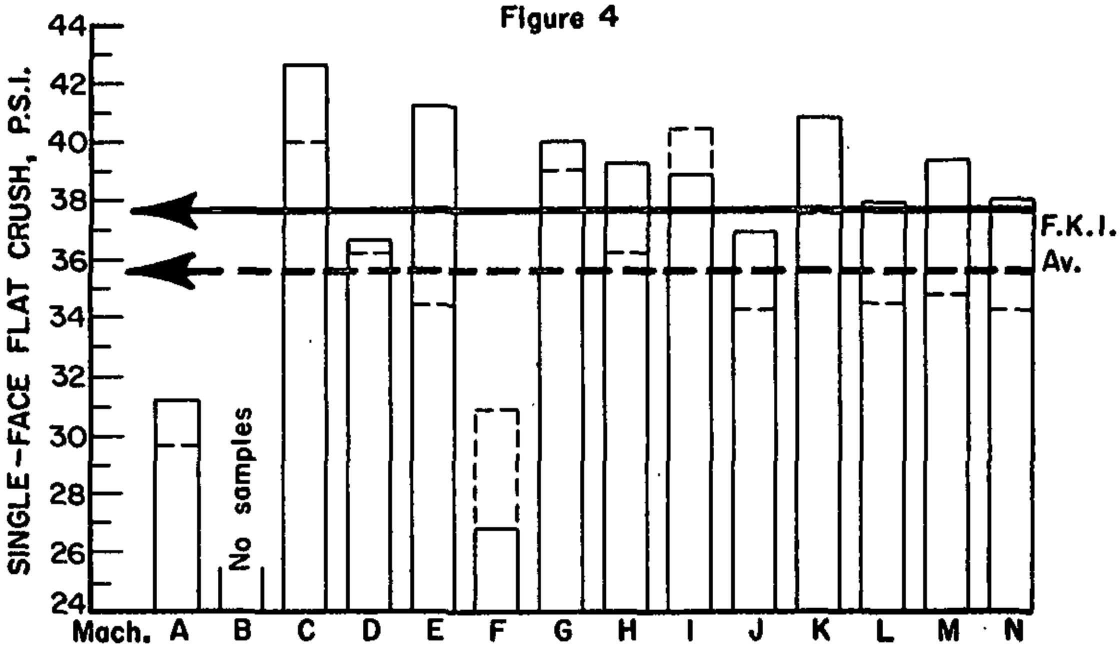
Figure 3



COMPARISON OF CONCORA FLAT CRUSH RESULTS

June, 1957

Figure 4



COMPARISON OF SINGLE-FACE FLAT CRUSH RESULTS

June, 1957

——— Current machine average

- - - - - Cumulative machine average

The test results obtained on the sample lots submitted from the production of each of the machines are shown in Tables III through XVI for Machines A through N, respectively. The maximum, minimum, and average test results obtained on each sample lot are shown for all tests except basis weight for which only the average is shown; in addition, the over-all average result for all the sample lots submitted for each machine is shown for each test. The latter over-all averages are reported as "current machine averages." A cumulative machine average is also shown and is calculated by averaging the current machine averages for the previous twelve periods (excluding the current period). Also shown for each machine in Tables III to XVI are the 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 means for comparing the current machine average with either the previous results for that particular machine or with the cumulative results for all machines--i.e., the cumulative F.K.I. average.

In Table II the current machine averages for the period covered by this report are summarized. It may be noted that basis weight varied from a low of 26.1 lb. for Machine A to a high of 29.8 lb. for Machine J. The average basis weight for the thirteen participating machines (current F.K.I. average) was 27.4 lb. per 1000 sq. ft., which is somewhat higher than the cumulative F.K.I. average of 27.0 lb. as indicated by the F.K.I. index of 101.6%. The average results for all machines satisfy the requirements of Rule 41.

Caliper results varied from a low value of 9.3 for Machine L to a high value of 11.6 for Machine J. The current F.K.I. average for caliper was 10.3 points, the same as the cumulative F.K.I. average, giving an F.K.I. index for caliper of 100.0%. The average caliper results for all machines meet the Rule 41 specification.

Concora flat crush test results ranged from a minimum of 26.0 p.s.i. for Machine F to a maximum of 40.7 p.s.i. for Machine C. The current F.K.I. average was 36.4 p.s.i., somewhat higher than the cumulative F.K.I. average of 34.3 p.s.i. as indicated by the F.K.I. index of 106.0%.

Machine C also had the highest average single-face flat crush, it being 42.7 p.s.i.; Machine F also had the lowest, 26.8 p.s.i. The current F.K.I. average for flat crush was 37.7 p.s.i., whereas the cumulative F.K.I. average was 35.6 p.s.i., giving an F.K.I. index of 105.7%.

For the current period, the current F.K.I. averages for basis weight, Concora flat crush, and single-face flat crush exceeded their respective cumulative averages, whereas the current F.K.I. average for caliper was the same as the cumulative average.

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE A
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Min.	Av.	Concora Flat Crush, p.s.i. Max.	Min.	Av.	Single-Face Flat Crush, p.s.i. Max.	Min.	Av.	Runability
A-1	4-27-57	6- 3-57	18	25.7	9.0	9.1	9.5	31.7	25.7	28.5	33.2	29.2	31.0	Satisfactory at 600 f.p.m.[a]
A-2	5-24-57	6-20-57	18	26.5	11.1	10.3	10.6	35.4	31.2	33.5	32.8	30.4	31.4	Satisfactory at 350 f.p.m.
Current Machine Average:				26.1			10.0			31.0			31.2	
Cumulative Machine Average:				26.4			10.1			30.0			29.7	
Machine Factor, %				99.0			99.6			103.2			105.0	
Machine Index, %				97.0			97.3			90.4			87.6	

a With 1/2 lb./in. tension.

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE B
June, 1957

No samples submitted.

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE C
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runability
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
C-1	5-17-57	5-27-57	138	27.4	9.9	9.6	9.8	44.9	37.7	40.1	46.2	42.4	45.0	Satisfactory at 600 f.p.m.[a]
C-2	6- 5-57	6-13-57	139	26.5	10.2	9.6	9.9	40.2	37.2	39.0	42.4	39.6	40.8	Satisfactory at 600 f.p.m.[a]
C-3	6- 6-57	6-20-57	140	27.6	10.9	10.0	10.5	45.6	39.0	43.0	43.2	41.8	42.3	Satisfactory at 600 f.p.m.[b]
Current Machine Average:				27.1			10.1			40.7			42.7	
Cumulative Machine Average:				27.0			10.0			38.0			40.0	
Machine Factor, %				100.7			100.4			107.0			106.6	
Machine Index, %				100.7			97.5			118.7			119.8	

a With 1/2 lb./in. tension.
b With 1 lb./in. tension.

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE D
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runability
D-1	5-14-57	5-28-57	122	27.9	11.8	10.4	11.0	37.7	32.3	33.5	38.6	31.2	34.6	Satisfactory at 600 f.p.m.[a]
D-2	5-16-57	5-28-57	123	27.2	11.0	9.5	10.4	38.9	32.3	36.0	41.6	34.2	37.5	Satisfactory at 600 f.p.m.[b]
D-3	5-20-57	6- 6-57	124	26.8	11.0	10.0	10.2	41.4	31.8	36.7	39.8	34.4	37.1	Satisfactory at 600 f.p.m.[b]
D-4	5-23-57	6- 6-57	125	26.2	10.7	9.9	10.2	41.4	36.0	38.8	42.0	33.6	38.5	Satisfactory at 600 f.p.m.[b]
D-5	5-27-57	6-12-57	126	26.5	10.9	10.0	10.4	38.4	31.2	34.8	41.0	35.6	37.2	Satisfactory at 600 f.p.m.[b]
D-6	5-31-57	6-12-57	127	27.0	11.0	10.0	10.8	36.0	30.6	32.5	38.4	30.4	34.5	Satisfactory at 600 f.p.m.[c]
D-7	6-3-57	6-17-57	128	27.1	11.1	10.1	10.8	40.2	35.4	38.0	38.6	35.6	37.3	Satisfactory at 600 f.p.m.[b]
Current Machine Average:				27.0			10.6			35.8			36.7	
Cumulative Machine Average				27.3			10.2			34.4			36.2	
Machine Factor, %				98.9			103.4			104.1			101.2	
Machine Index, %				100.1			102.3			104.3			102.9	

[a] With 1/2 lb./in. tension.
[b] With 1 lb./in. tension.
[c] With 1-1/2 lb./in. tension.

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE E
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runability
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
E-1	--	5-28-57	99	29.6	10.9	10.0	10.4	36.5	31.1	34.1	43.4	38.0	41.2	Satisfactory at 400 f.p.m.
E-2	5-22-57	5-28-57	100	27.9	9.8	9.8	9.8	39.5	35.3	37.5	39.0	36.4	37.5	Satisfactory at 400 f.p.m.
E-3	--	6-19-57	101	28.1	9.2	8.9	9.0	44.4	37.8	40.0	45.8	45.0	45.3	Satisfactory at 350 f.p.m.
E-4	--	6-19-57	102	28.2	9.3	8.9	9.1	42.0	36.6	38.9	42.8	36.0	40.5	Satisfactory at 450 f.p.m.
Current Machine Average:				28.4			9.6			37.6			41.2	
Cumulative Machine Average:				28.4			10.1			33.1			34.4	
Machine Factor, %				100.0			94.9			113.8			119.6	
Machine Index, %				105.5			92.8			109.7			115.5	

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE F
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runability
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
F-1	5-21-57	6- 4-57	13	28.5	10.0	9.6	9.8	28.8	24.6	26.6	27.6	24.0	26.0	Satisfactory at 600 f.p.m.[a]
F-2	5-21-57	6- 4-57	14	28.4	10.1	9.2	9.8	29.4	22.8	26.3	28.0	26.0	27.4	Satisfactory at 600 f.p.m.[a]
F-3	5-21-57	6- 4-57	15	28.1	10.0	9.4	9.8	25.8	24.0	25.0	28.8	26.2	26.9	Satisfactory at 600 f.p.m.[b]
Current Machine Average:				28.3			9.8			26.0			26.8	
Cumulative Machine Average:				27.3			9.5			28.4			30.9	
Machine Factor, %				103.6			102.9			91.5			86.6	
Machine Index, %				105.1			95.1			75.7			75.2	

[a] With 1-1/2 lb./in. tension.
[b] With 1 lb./in. tension.

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE G
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runability
G-1	5-17-57	5-27-57	269	27.1	11.4	10.8	11.1	43.1	39.5	41.3	45.4	40.0	43.0	Satisfactory at 600 f.p.m.[a]
G-2	5-21-57	5-27-57	271	26.7	11.4	10.3	10.7	41.9	37.1	39.5	43.2	40.2	42.0	Satisfactory at 600 f.p.m.[a]
G-3	5-24-57	6- 3-57	273	27.0	11.3	10.6	11.0	37.1	32.9	34.6	45.0	38.0	41.4	Satisfactory at 600 f.p.m.[a]
G-4	6- 4-57	6-10-57	275	26.7	11.5	10.5	10.9	38.4	34.2	36.2	40.4	38.4	39.4	Satisfactory at 600 f.p.m.[a]
G-5	6-10-57	6-14-57	277	27.0	11.6	10.9	11.2	37.2	35.4	36.6	39.2	35.2	37.8	Satisfactory at 600 f.p.m.[a]
G-6	6-11-57	6-19-57	279	27.0	11.9	11.3	11.6	40.8	37.8	39.4	40.4	37.0	38.0	Satisfactory at 600 f.p.m.[a]
G-7	6-14-57	6-19-57	281	26.0	11.7	11.0	11.4	41.4	36.6	38.3	39.8	37.0	38.5	Satisfactory at 500 f.p.m.
Current Machine Average:				26.8			11.1			38.0			40.0	
Cumulative Machine Average:				26.5			10.7			38.6			39.0	
Machine Factor, %				101.2			104.4			98.3			102.7	
Machine Index, %				99.4			108.0			110.8			112.3	

[a] With 1/2 lb./in. tension.

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE H
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Min.	Av.	Concora Flat Crush, p.s.i. Max.	Min.	Av.	Single-Face Flat Crush, p.s.i. Max.	Min.	Av.	Runability
H-1	5-23-57	5-31-57	1	26.7	10.9	10.0	10.4	41.3	37.7	39.5	40.2	37.6	38.7	Satisfactory at 450 f.p.m.
H-2	5-24-57	5-31-57	2	28.0	10.1	9.1	9.8	37.7	26.9	33.2	40.0	37.4	38.4	Satisfactory at 450 f.p.m.
H-3	5-31-57	6-10-57	3	26.5	10.2	9.9	10.0	39.0	33.6	36.6	42.6	37.8	40.1	Satisfactory at 600 f.p.m.[a]
H-4	5-31-57	6-10-57	4	26.3	10.0	9.1	9.6	43.2	36.0	39.7	41.2	37.4	39.7	Satisfactory at 600 f.p.m.[a]
H-5	6-4-57	6-13-57	5	26.8	10.2	10.0	10.0	39.6	35.4	37.8	41.0	36.0	38.8	Satisfactory at 600 f.p.m.[b]
H-6	6- 6-57	6-13-57	6	25.7	9.8	9.1	9.4	37.8	33.6	35.9	40.6	38.2	39.5	Satisfactory at 600 f.p.m.[a]
Current Machine Average:				26.7			9.9			37.1			39.2	
Cumulative Machine Average:				27.5			10.2			32.9			36.2	
Machine Factor, %				97.1			96.8			112.9			108.2	
Machine Index, %				98.9			95.7			108.3			110.1	

[a] With 1/2 lb./in. tension.
[b] With 1 lb./in. tension.

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE I
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Min.	Av.	Concora Flat Crush, p.s.i. Max.	Min.	Av.	Single-Face Flat Crush, p.s.i. Max.	Min.	Av.	Runability
I-1	5-22-57	6- 4-57	685	26.8	11.4	10.9	11.1	43.8	36.0	39.7	41.0	33.0	38.3	Satisfactory at 600 f.p.m.[a]
I-2	6- 2-57	6-11-57	--	27.7	11.2	10.8	11.0	37.8	35.4	36.6	40.4	38.6	39.4	Satisfactory at 600 f.p.m.[a]
Current Machine Average:				27.2			11.1			38.2			38.9	
Cumulative Machine Average:				27.0			11.3			37.8			40.4	
Machine Factor, %				100.7			98.2			100.9			96.1	
Machine Index, %				101.0			107.2			111.3			109.1	

[a] With 1/2 lb./in. tension.

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE J
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Min.	Av.	Concora Flat Crush, p.s.i. Max.	Min.	Av.	Single-Face Flat Crush, p.s.i. Max.	Min.	Av.	Runability
J-1	5-29-57	6- 3-57	102	31.5	12.1	11.7	11.9	40.7	35.9	37.8	40.4	37.2	39.1	Satisfactory at 600 f.p.m.[a]
J-2	6- 4-57	6-10-57	103	29.0	11.5	10.5	11.0	36.6	31.8	33.5	38.2	36.8	37.5	Satisfactory at 600 f.p.m.[b]
J-3	6-11-57	6-17-57	103	30.3	12.1	11.8	12.0	37.8	31.8	35.3	37.0	36.0	36.5	Satisfactory at 600 f.p.m.[b]
J-4	6-13-57	6-20-57	105	28.6	11.7	11.2	11.4	36.0	33.6	34.8	38.4	33.0	34.6	Satisfactory at 600 f.p.m.[b]
Current Machine Average:				29.8			11.6			35.4			36.9	
Cumulative Machine Average:				29.3			11.4			32.1			34.2	
Machine Factor, %				101.8			101.9			110.1			108.0	
Machine Index, %				110.7			112.3			103.1			103.6	

[a] With 1-1/2 lb./in. tension.
[b] With 1/2 lb./in. tension.

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE K
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runability
K-1	5-17-57	5-27-57	270	26.4	10.4	9.8	10.1	39.5	37.1	38.3	42.2	40.4	41.0	Satisfactory at 600 f.p.m.[a]
K-2	5-21-57	5-27-57	272	27.6	11.4	10.6	10.8	48.5	44.3	46.5	45.0	41.8	42.9	Satisfactory at 600 f.p.m.[a]
K-3	5-27-57	6- 3-57	274	26.3	11.9	10.9	11.2	41.9	38.3	39.9	41.8	38.0	39.1	Satisfactory at 600 f.p.m.[a]
K-4	6- 4-57	6-10-57	276	27.5	11.1	10.3	10.9	41.4	39.6	40.3	44.4	40.4	42.7	Satisfactory at 600 f.p.m.[a]
K-5	6-10-57	6-14-57	278	26.3	10.5	9.9	10.1	41.4	37.8	39.6	42.4	40.0	41.2	Satisfactory at 600 f.p.m.[a]
K-6	6-11-57	6-19-57	280	26.7	10.9	10.6	10.8	42.6	36.6	40.0	43.0	37.2	39.4	Satisfactory at 600 f.p.m.[a]
K-7	6-14-57	6-19-57	282	26.5	11.0	10.5	10.8	40.8	34.2	38.3	40.2	38.0	39.1	Satisfactory at 600 f.p.m.[a]
Current Machine Average:				26.7			10.7			40.4			40.8	
Cumulative Machine Average:				26.6			10.5			37.0			37.6	
Machine Factor, %				100.5			101.8			109.1			108.5	
Machine Index, %				99.2			103.4			117.9			114.4	

a With 1/2 lb./in. tension.

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE L
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runability
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
L-1	5-21-57	5-31-57	--	27.9	10.0	9.5	9.9	40.7	37.7	38.9	43.8	39.2	41.3	Satisfactory at 575 f.p.m.[a]
L-2	5-23-57	6- 4-57	--	26.1	9.3	8.8	9.0	41.4	32.4	38.0	38.6	35.4	37.1	Satisfactory at 600 f.p.m.[a]
L-3	5-25-57	6- 4-57	--	27.6	10.0	9.2	9.5	39.6	31.2	36.6	40.2	35.6	37.7	Satisfactory at 600 f.p.m.[b]
L-4	6- 6-57	6-17-57	129	27.1	9.0	8.8	8.9	37.8	32.4	35.2	36.6	35.0	35.7	Satisfactory at 600 f.p.m.[a]
Current Machine Average:				27.2			9.3			37.2			37.9	
Cumulative Machine Average				26.4			9.1			32.8			34.4	
Machine Factor, %				102.9			102.2			113.2			110.4	
Machine Index, %				100.8			90.4			108.5			106.5	

[a] With 1/2 lb./in. tension.
[b] With 1 lb./in. tension.

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE M
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Min.	Av.	Concora Flat Crush, p.s.i. Max.	Min.	Av.	Single-Face Flat Crush, p.s.i. Max.	Min.	Av.	Runability
M-1	6- 4-57	6-10-57	94	26.6	10.9	10.0	10.4	39.6	34.2	37.4	41.8	36.4	39.4	Satisfactory at 600 f.p.m.[a]
M-2	6- 6-57	6-11-57	95	29.0	10.2	9.9	10.1	39.6	37.2	38.2	40.2	38.2	39.2	Satisfactory at 600 f.p.m.[b]
Current Machine Average:				27.8			10.2			37.8			39.3	
Cumulative Machine Average:				26.7			10.7			33.8			34.7	
Machine Factor, %				104.0			95.6			111.7			113.2	
Machine Index, %				103.1			99.2			110.3			110.3	

[a] With 1 lb./in. tension.
[b] With 1-1/2 lb./in. tension.

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE N
June, 1957

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runability
N-1	5-21-57	5-27-57	114	26.8	10.8	10.0	10.6	36.5	34.7	35.6	38.6	36.0	37.1	Satisfactory at 600 f.p.m.[a]
N-2	--	6-10-57	115	27.6	11.1	10.9	11.0	43.2	36.0	39.7	40.4	35.2	38.4	Satisfactory at 600 f.p.m.[b]
N-3	--	6-10-57	116	26.5	10.5	10.0	10.2	39.6	34.2	37.9	38.4	35.4	37.0	Satisfactory at 600 f.p.m.[b]
N-4	6- 6-57	6-11-57	117	27.7	10.2	9.9	10.0	38.4	36.6	37.3	39.2	36.8	37.8	Satisfactory at 600 f.p.m.[b]
N-5	6-13-57	6-18-57	119	25.7	10.0	9.7	9.9	39.0	34.2	37.2	41.8	38.4	40.0	Satisfactory at 600 f.p.m.[a]
Current Machine Average:				26.9			10.3			37.5			38.0	
Cumulative Machine Average:				26.8			10.6			33.6			34.2	
Machine Factor, %				100.3			97.3			111.7			111.2	
Machine Index, %				99.6			100.1			109.5			106.8	

[a] With 1/2 lb./in. tension.
[b] With 1 lb./in. tension.