THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Report 95

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

June 1, 1962

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Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium are now being prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis. This new system was initiated on August 1, 1961. This fifth report under the new system presents results obtained during the months of April and May, 1962.

During this fifth bimonthly period, 170 rolls of corrugating medium representing the production of twenty-five machines were evaluated. A tabulation of the number of rolls submitted from each machine during the months of April and May, 1962, is given in Table I. In connection with the data given in Table I, it should be mentioned that, effective September 1, 1961, at the request of the Technical Committee, the limit on the number of rolls submitted for evaluation from each machine during a given month was reduced from six to four.

Each sample of corrugating medium was evaluated for basis weight, caliper, Concora flat crush (conditioned after fluting), H. and D. flat crush on single-faced board, and runnability. Runnability was measured by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with minimum tension. If unsatisfactory runnability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runnability was obtained--i.e., no ruptured flutes. If the medium fabricated satisfactorily at 600 f.p.m. with minimum tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 0.5 lb. per inch, 1.0 lb. per inch, and 1.5 lb. per inch.

TABLE I

NUMBER OF ROLLS OF CORRUGATING MEDIUM SUBMITTED
FOR EVALUATION FROM EACH MACHINE

April and May, 1962

Machine Code	Number of Rolls
A	7
B	7
C	8
D	8
E	7
F	11
G	4
H	7
I	5
J	4
K	12
L	8
M	7
N	4
O	8
P	8
Q	8
R	9
S	9
T	1
U	8
V	4
W	7
X	8
Y	1
Total	170

Flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension. The flat crush results, in addition to supplying information about quality, 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.

The average test results obtained on the rolls of corrugating medium submitted by each participant during April and May, 1962, i.e., the current machine averages, are shown in Table II and graphically presented in Fig. 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 of test results for all machines participating in the study during a given period. 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.

The test results obtained on the sample lots submitted from the production of individual machines during April and May, 1962, are shown in Tables III through XXVII for Machines A through Y, 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 sample lots submitted from a given machine is shown for each test. The latter

TABLE II

SUMMARY OF CURRENT MACHINE AVERAGES

April and May, 1962

Mill Code	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
A	26.6	10.0	37.1	34.7
B	26.4	10.1	37.8	34.1
C	27.9	10.9	36.3	31.7
D	26.6	10.2	34.3	31.3
E	27.1	10.6	38.5	35.4
F	27.1	9.6	31.7	31.6
G	26.7	9.7	38.5	34.0
H	26.7	10.7	38.1	34.6
I	27.2	9.9	39.4	34.3
J	27.7	10.6	37.8	34.6
K	27.0	9.9	33.4	31.0
L	26.7	9.5	36.9	33.4
M	27.0	10.4	36.9	33.1
N	27.2	9.9	33.8	30.4
O	27.4	10.6	36.8	33.3
P	28.2	10.5	32.7	29.0
Q	26.5	11.5	36.1	32.9
R	26.8	10.6	35.6	30.8
S	26.7	9.3	37.7	33.0
T	26.7	9.0	37.8	35.6
U	26.6	10.2	37.8	33.4
V	26.9	11.0	40.2	36.9
W	28.1	11.9	38.3	34.9
X	26.8	10.3	37.5	32.6
Y	26.0	10.2	35.3	32.0
Current F.K.I. Average	27.0	10.3	36.7	33.1
Cumulative F.K.I. Average	27.3	10.2	36.6	33.3
F.K.I. Index, %	98.8	100.4	100.2	99.6

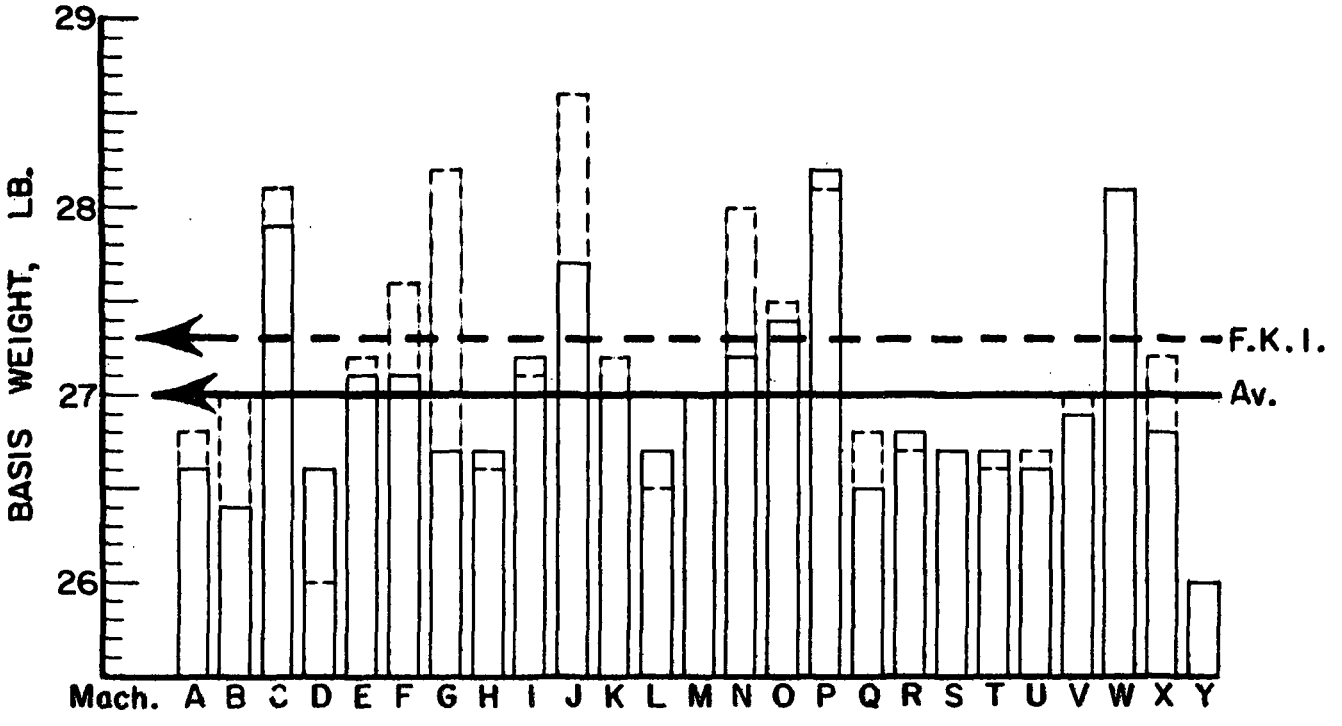

Figure 1. Comparison of Basis Weight Results

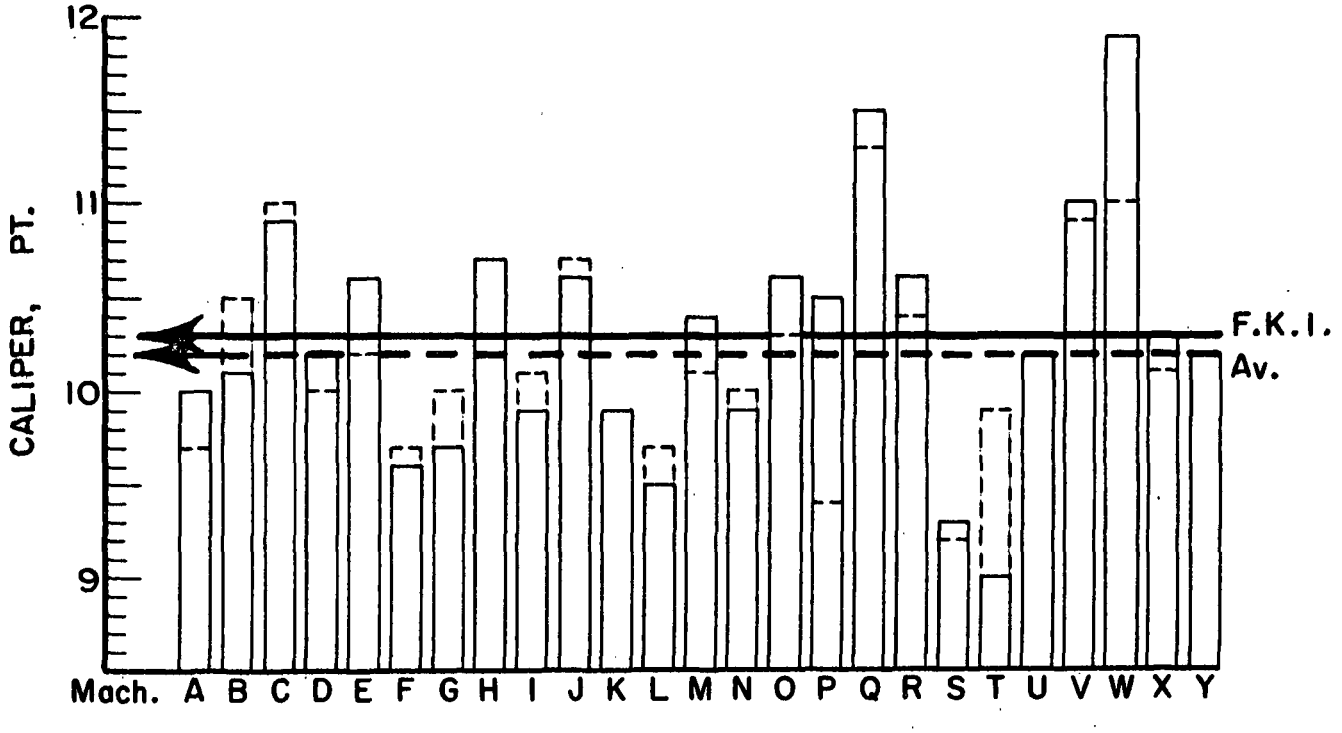

Figure 2. Comparison of Caliper Results

——— Current machine average

- - - - - Cumulative machine average

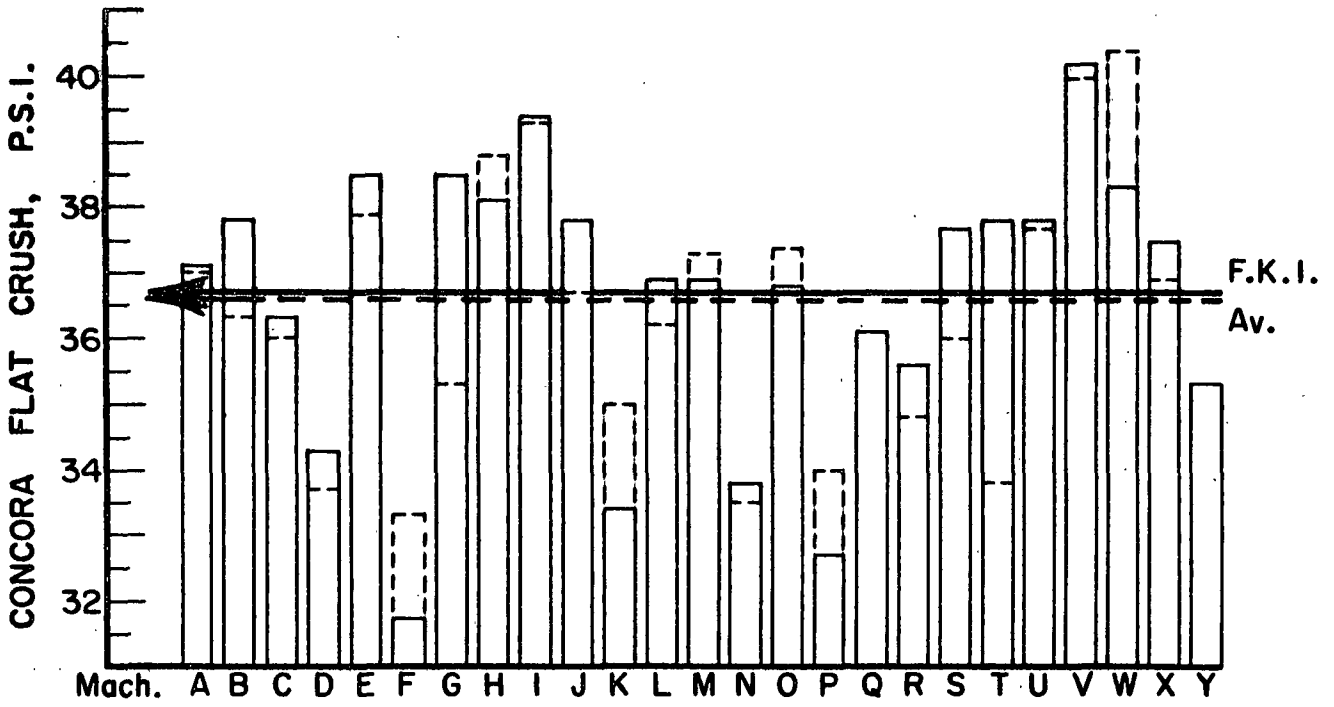

Figure 3. Comparison of Concora Flat Crush Results

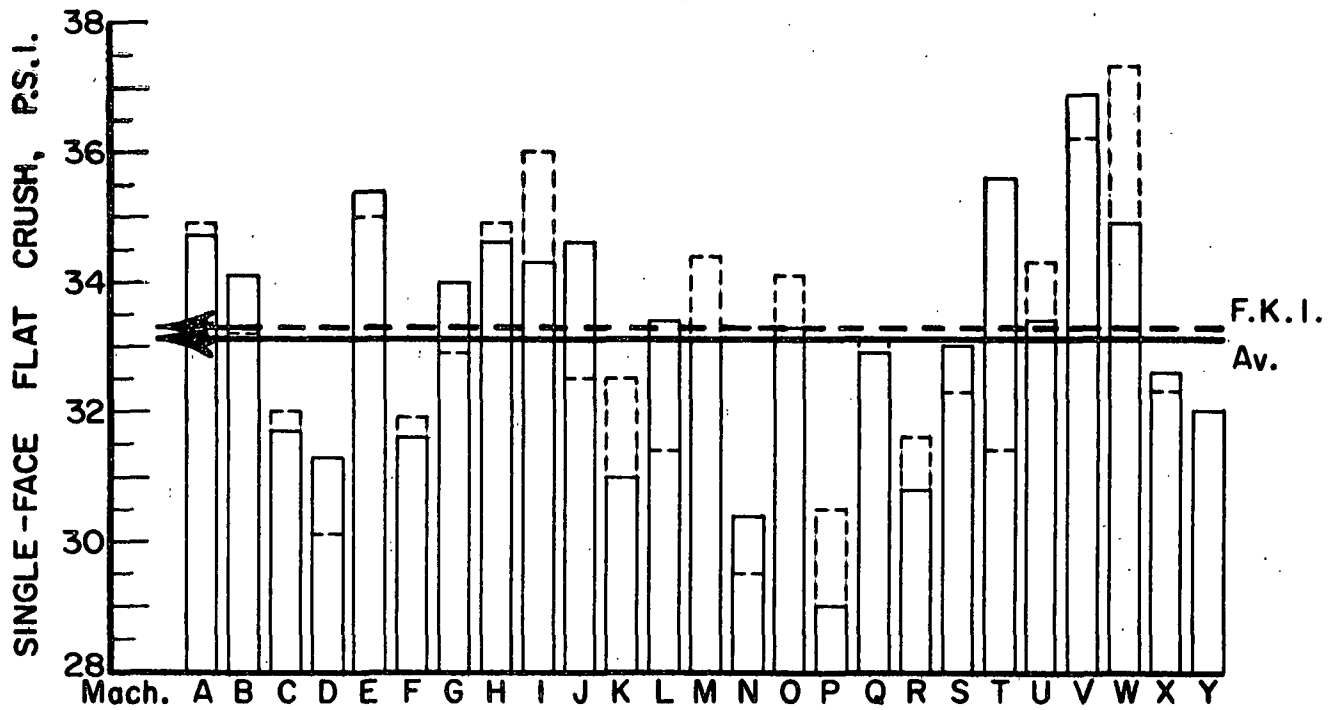

Figure 4. Comparison of Single-Face Flat Crush Results

——— Current machine average

- - - - - Cumulative machine average

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE A
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
A-1	3-24-62	4- 9-62	781	25.6	9.9	9.1	9.6	37.8	35.4	36.5	31.6	29.8	30.3	1
A-2	4-10-62	4-27-62	260	27.2	10.7	10.0	10.2	39.0	34.2	36.1	36.6	35.6	36.0	Min.
A-3	4-20-62	5- 4-62	619	26.9	10.2	9.8	10.0	39.0	35.4	36.6	36.4	33.8	35.6	Min.
A-4	4-24-62	5- 4-62	766	26.8	10.9	10.0	10.3	39.6	36.6	37.7	35.2	31.6	33.6	Min.
A-5	4-25-62	5- 4-62	801	26.9	10.3	9.8	10.1	40.8	36.6	38.5	39.8	35.4	37.2	Min.
A-6	4-27-62	5- 9-62	877	26.5	10.3	9.2	9.9	43.2	36.0	39.1	38.0	36.6	37.2	1
A-7	5- 7-62	5-25-62	197	26.0	10.2	9.8	10.0	36.6	34.2	35.4	34.4	31.4	33.2	1/2
Current Machine Average				26.6			10.0			37.1			34.7	
Cumulative Machine Average				26.8			9.7			37.0			34.9	
Machine Factor, %				99.3			103.1			100.3			99.7	
Machine Index, %				97.3			97.8			101.5			104.4	

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE B
April and May, 1962

B-1	3-21-62	4-16-62	4095	27.0	10.8	10.1	10.5	42.6	39.0	40.3	37.4	35.6	36.8	1-1/2
B-2	3-23-62	4-27-62	4718	26.4	10.1	10.0	10.0	40.2	37.2	39.0	33.6	31.8	33.0	1-1/2
B-3	3-26-62	4-20-62	5338	26.3	10.2	10.0	10.0	39.0	36.6	37.8	35.6	33.4	34.4	1-1/2
B-4	4- 9-62	4-20-62	1811	26.0	10.1	9.8	10.0	36.6	33.6	35.0	34.8	32.4	34.1	1-1/2
B-5	4-11-62	4-27-62	2344	25.7	10.0	9.8	9.9	40.2	36.6	38.3	33.4	31.0	32.3	1-1/2
B-6	4-23-62	5-10-62	4713	27.3	10.9	10.2	10.5	40.2	37.8	38.9	37.6	34.4	35.9	1-1/2
B-7	5- 5-62	5-15-62	960	25.8	10.2	9.9	10.0	37.2	34.2	35.4	32.6	31.6	32.0	1-1/2
Current Machine Average				26.4			10.1			37.8			34.1	
Cumulative Machine Average				27.0			10.5			36.3			33.2	
Machine Factor, %				97.8			96.8			104.3			102.6	
Machine Index, %				96.5			99.0			103.4			102.4	

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE C
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
C-1	3-27-62	4- 3-62	697	28.0	12.0	11.0	11.3	39.6	31.2	35.4	30.2	28.2	28.9	1/2
C-2	3-27-62	4- 3-62	698	27.9	11.5	11.0	11.2	36.0	33.0	34.1	29.2	27.0	28.0	1-1/2
C-3	4-12-62	4-20-62	705	27.4	10.8	10.0	10.4	38.4	34.2	36.0	33.0	29.2	31.4	1
C-4	4-12-62	4-20-62	706	28.0	10.8	10.0	10.3	39.0	36.6	37.9	36.2	33.0	34.8	1
C-5	4-27-62	5- 4-62	713	28.2	11.0	10.5	10.8	37.8	36.0	37.1	31.6	31.2	31.4	1
C-6	4-27-62	5- 4-62	714	28.2	11.5	10.2	11.0	39.0	34.8	37.3	35.2	33.8	34.6	1
C-7	5-11-62	5-21-62	721	27.6	11.5	11.0	11.1	40.8	32.4	36.2	34.4	31.0	32.5	1/2
C-8	5-11-62	5-21-62	722	27.9	11.2	10.8	11.0	37.8	34.2	36.2	32.8	30.6	31.8	1
Current Machine Average				27.9			10.9			36.3			31.7	
Cumulative Machine Average				28.1			11.0			36.0			32.0	
Machine Factor, %				99.2			99.4			100.7			98.9	
Machine Index, %				102.2			106.5			99.2			95.2	

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE D
April and May, 1962

D-1	3-19-62	3-26-62	11	25.8	10.9	9.8	10.1	38.4	33.6	35.4	32.8	30.8	31.6	1-1/2
D-2	3-25-62	3-29-62	12	26.3	10.0	9.3	9.8	36.6	33.6	34.7	30.6	29.6	30.3	1-1/2
D-3	3-31-62	4- 5-62	13	25.7	10.3	9.8	10.1	36.6	31.2	34.0	32.2	28.2	29.8	1-1/2
D-4	4-10-62	4-13-62	14	29.5	10.0	9.0	9.7	36.0	32.4	34.2	34.0	31.4	32.7	1-1/2
D-5	4-14-62	4-19-62	15	25.8	11.0	10.2	10.6	36.6	32.4	34.9	31.6	29.6	30.7	1-1/2
D-6	4-23-62	4-27-62	16	26.8	11.0	10.5	10.8	33.6	30.6	32.5	32.4	29.6	31.0	1-1/2
D-7	4-28-62	5- 4-62	17	26.6	11.0	10.5	10.9	33.0	31.8	32.5	30.4	29.0	29.9	1-1/2
D-8	5-14-62	5-18-62	18	26.1	10.2	9.2	9.6	37.8	35.4	36.5	35.8	33.0	34.1	1-1/2
Current Machine Average				26.6			10.2			34.3			31.3	
Cumulative Machine Average				26.0			10.0			33.7			30.1	
Machine Factor, %				102.2			102.1			101.9			103.8	
Machine Index, %				97.3			99.6			93.9			93.9	

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE E
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
E-1	3-11-62	4-16-62	487	27.4	10.6	10.1	10.3	39.0	34.2	37.0	36.0	34.4	35.0	1-1/2
E-2	3-12-62	4-16-62	488	27.3	10.7	10.0	10.3	39.6	36.0	38.3	37.8	34.2	35.6	1
E-3	4- 2-62	4-24-62	489	27.1	11.1	10.3	10.9	41.4	35.4	38.3	36.0	32.2	34.5	1/2
E-4	4- 4-62	5- 3-62	490	27.8	10.9	10.2	10.6	42.6	37.2	40.3	36.8	35.0	35.8	1/2
E-5	4-16-62	5- 9-62	491	27.1	10.8	10.3	10.6	40.8	36.0	39.1	37.8	36.2	36.6	1/2
E-6	4-18-62	5- 9-62	492	26.5	10.9	10.2	10.7	39.6	36.6	37.9	37.6	33.0	35.1	Min.
E-7	5- 1-62	5-15-62	493	26.7	10.9	10.2	10.6	43.2	34.2	38.3	37.2	32.4	35.1	1
Current Machine Average				27.1			10.6			38.5			35.4	
Cumulative Machine Average				27.2			10.2			37.9			35.0	
Machine Factor, %				99.6			103.8			101.4			101.1	
Machine Index, %				99.3			103.4			105.1			106.4	

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE F
April and May, 1962

F-1	2- 6-62	3-27-62	47	26.1	9.9	9.0	9.6	31.2	28.8	30.2	31.6	28.6	29.9	1-1/2
F-2	2-12-62	3-27-62	48	27.7	10.0	9.0	9.6	34.2	30.0	32.6	35.4	31.4	33.2	1-1/2
F-3	2-14-62	3-27-62	49	27.0	10.0	9.0	9.8	35.4	33.6	34.3	33.8	32.2	33.0	1-1/2
F-4	2-23-62	3-27-62	50	27.0	10.0	9.1	9.7	35.4	31.8	33.8	34.0	30.4	32.1	1-1/2
F-5	2-28-62	3-27-62	51	26.9	10.0	9.0	9.4	35.4	31.2	34.0	32.4	30.6	31.4	1-1/2
F-6	3- 6-62	4-18-62	52	27.4	9.9	9.0	9.6	33.6	30.6	32.2	34.6	32.2	33.4	1-1/2
F-7	3-12-62	4-18-62	53	27.5	10.1	9.2	9.7	33.0	28.8	30.7	32.6	29.6	31.5	1-1/2
F-8	3-14-62	4-18-62	54	27.6	10.3	9.3	9.8	31.2	30.0	30.7	30.8	29.4	30.4	1-1/2
F-9	3-17-62	4-18-62	55	27.6	10.3	9.9	10.1	32.4	28.8	30.8	31.6	30.0	31.0	1-1/2
F-10	3-20-62	4-18-62	56	26.5	9.9	9.0	9.5	33.0	28.2	30.1	33.0	30.4	31.7	1-1/2
F-11	3-23-62	4-18-62	57	27.0	9.7	9.0	9.3	31.2	27.6	29.4	31.4	28.8	30.1	1-1/2
Current Machine Average				27.1			9.6			31.7			31.6	
Cumulative Machine Average				27.6			9.7			33.3			31.9	
Machine Factor, %				98.4			99.9			95.1			99.2	
Machine Index, %				99.4			94.3			86.8			95.0	

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE G
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
G-1		4-12-62	129	26.9	10.2	9.0	9.5	42.6	34.8	38.5	37.2	33.4	34.8	1-1/2
G-2		4-12-62	130	26.5	10.3	9.0	9.7	40.2	37.2	38.8	37.0	33.0	34.8	1/2
G-3		4-12-62	131	27.4	10.2	9.6	9.9	43.2	34.2	39.4	34.6	32.0	33.5	Min.
G-4		4-12-62	132	26.2	10.1	9.0	9.5	43.2	33.0	37.2	34.4	32.4	33.2	1/2
Current Machine Average				26.7			9.7			38.5			34.0	
Cumulative Machine Average				28.2			10.0			35.3			32.9	
Machine Factor, %				95.0			97.1			109.1			103.5	
Machine Index, %				98.0			94.4			105.2			102.3	

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE H
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
H-1	3-20-62	3-27-62	307	26.2	11.1	10.0	10.4	40.8	36.6	38.5	35.6	33.2	34.5	1-1/2
H-2	3-30-62	4- 3-62	308	26.2	11.2	10.0	10.7	40.8	36.6	38.6	37.2	33.0	35.4	1-1/2
H-3	4- 4-62	4-12-62	309	26.8	10.4	9.8	10.1	39.6	35.4	37.3	35.2	33.4	34.0	1-1/2
H-4	4-12-62	4-16-62	310	27.4	11.3	10.0	10.7	39.6	33.6	37.4	35.4	31.2	33.6	1-1/2
H-5	4-17-62	4-23-62	311	26.8	11.3	11.0	11.1	37.8	36.0	36.8	35.2	31.6	33.2	1-1/2
H-6	5- 4-62	5-11-62	312	26.9	11.0	10.0	10.7	41.4	37.2	39.1	38.6	35.8	37.4	1-1/2
H-7	5- 8-62	5-11-62	313	26.6	11.5	10.2	10.9	41.4	37.2	38.8	36.2	33.6	34.4	1-1/2
Current Machine Average				26.7			10.7			38.1			34.6	
Cumulative Machine Average				26.6			10.7			38.8			34.9	
Machine Factor, %				100.4			100.0			98.2			99.3	
Machine Index, %				97.8			104.1			104.2			104.1	

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE I
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
I-1	3-20-62	4- 5-62	46	26.3	10.6	9.3	9.6	39.6	37.2	38.4	35.0	31.8	33.2	1-1/2
I-2	3-26-62	4- 5-62	47	27.8	9.8	9.0	9.4	41.4	37.8	39.8	35.2	33.6	34.5	1-1/2
I-3	3-27-62	4-12-62	48	26.9	10.2	8.9	9.8	41.4	37.8	39.8	35.6	33.6	34.8	1-1/2
I-4	4-14-62	5-16-62	49	28.9	11.0	10.2	10.7	42.6	39.0	40.3	34.6	33.4	34.1	1
I-5	5- 7-62	5-16-62	50	26.3	10.1	9.9	10.0	40.2	37.2	38.8	36.4	34.0	34.7	1-1/2
Current Machine Average				27.2			9.9			39.4			34.3	
Cumulative Machine Average				27.1			10.1			39.3			36.0	
Machine Factor, %				100.6			97.6			100.3			95.1	
Machine Index, %				99.7			96.6			107.8			102.9	

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE J
April and May, 1962

J-1	4-11-62	4-24-62	402	27.1	11.0	10.0	10.6	37.8	34.2	35.9	37.6	32.2	34.9	1-1/2
J-2	4-17-62	4-24-62	403	27.7	11.0	10.3	10.7	39.6	36.0	37.6	35.6	32.6	33.8	1
J-3	5- 4-62	5-17-62	404	28.2	11.0	10.1	10.5	40.8	37.8	39.1	35.6	33.2	34.3	1-1/2
J-4	5-11-62	5-17-62	405	27.8	11.2	10.2	10.6	41.4	37.2	38.8	36.2	33.8	35.3	1-1/2
Current Machine Average				27.7			10.6			37.8			34.6	
Cumulative Machine Average				28.6			10.7			36.7			32.5	
Machine Factor, %				96.9			99.2			103.0			106.4	
Machine Index, %				101.4			103.5			103.5			103.9	

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE K
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
K-1	3- 2-62	4-18-62	T-1	26.3	11.2	10.0	10.4	34.2	31.2	32.6	31.6	28.0	30.2	1-1/2
K-2	3-12-62	3-28-62	T-1	26.2	11.1	10.0	10.3	36.0	32.4	34.3	32.6	30.6	31.6	1-1/2
K-3	3-12-62	3-28-62	T-2	27.0	10.4	10.0	10.1	31.8	31.2	31.4	31.2	28.8	30.0	1-1/2
K-4	3-12-62	3-28-62	T-3	27.0	10.9	10.0	10.3	33.0	30.6	31.8	32.0	30.8	31.5	1-1/2
K-5	3-12-62	3-28-62	T-4	26.5	10.2	9.6	9.9	37.8	33.6	35.2	36.0	32.8	34.2	1-1/2
K-6	4- 4-62	4-18-62	AA-29	27.5	10.2	9.2	9.9	36.0	31.8	34.4	31.6	29.6	31.1	1-1/2
K-7	4- 4-62	4-18-62	AA-30	27.4	10.0	9.4	9.8	31.8	30.6	31.3	30.4	28.6	29.8	1-1/2
K-8	4- 4-62	4-18-62	AA-31	27.6	10.0	9.3	9.8	32.4	30.0	31.0	30.0	28.8	29.6	1-1/2
K-9	4- 4-62	5-18-62	D-48	27.6	9.2	8.9	9.0	35.4	34.8	35.0	31.0	28.4	30.0	1-1/2
K-10	5- 2-62	5-18-62	E-1-A	27.1	10.4	9.5	10.0	34.8	31.8	33.8	32.2	30.4	31.6	1-1/2
K-11	5- 2-62	5-18-62	E-1-B	26.6	10.0	9.2	9.7	37.2	33.6	35.4	33.0	31.2	32.3	1-1/2
K-12	5- 7-62	5-18-62	E-1-C	27.1	9.9	9.3	9.7	36.6	34.2	34.8	31.2	29.8	30.4	1-1/2
Current Machine Average				27.0			9.9			33.4			31.0	
Cumulative Machine Average				27.2			9.9			35.0			32.5	
Machine Factor, %				99.2			100.0			95.6			95.5	
Machine Index, %				98.8			96.7			91.4			93.2	

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE L
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
L-1	3-19-62	3-26-62	11	25.9	9.6	9.0	9.1	39.6	36.0	37.3	35.4	32.6	33.6	1-1/2
L-2	3-25-62	3-29-62	12	26.6	9.7	8.5	9.0	43.8	38.4	40.4	36.0	33.0	34.9	1-1/2
L-3	3-31-62	4- 5-62	13	26.6	10.7	9.1	10.1	37.8	34.2	35.6	32.0	30.0	30.9	1-1/2
L-4	4- 7-62	4-12-62	14	26.6	9.8	8.9	9.4	40.2	35.4	37.3	35.6	31.4	33.0	1-1/2
L-5	4-14-62	4-19-62	15	26.4	9.7	9.0	9.2	34.8	30.0	32.3	32.8	28.6	31.2	1-1/2
L-6	4-23-62	4-27-62	16	27.4	10.2	9.8	10.0	43.2	39.0	40.1	37.4	35.6	36.4	1-1/2
L-7	4-27-62	5- 4-62	17	25.8	10.2	8.8	9.7	36.6	30.0	34.1	33.4	30.6	31.9	1-1/2
L-8	5-14-62	5-18-62	18	28.1	10.0	9.0	9.4	40.2	35.4	37.8	36.6	34.0	35.0	1-1/2
Current Machine Average				26.7			9.5			36.9			33.4	
Cumulative Machine Average				26.5			9.7			36.2			31.4	
Machine Factor, %				100.6			98.2			102.0			106.2	
Machine Index, %				97.7			92.7			100.8			100.2	

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE M
April and May, 1962

M-1	4- 3-62	4-23-62	--	27.2	10.9	10.4	10.7	37.8	35.4	36.6	32.8	31.4	32.3	1-1/2
M-2	4-13-62	4-23-62	--	27.4	10.8	10.4	10.6	39.6	34.8	36.4	33.4	32.4	33.0	1
M-3	4-14-62	4-23-62	--	27.2	11.0	10.4	10.7	37.2	33.6	35.4	34.0	31.6	32.8	1/2
M-4	4-19-62	4-23-62	--	27.1	10.9	10.3	10.6	37.8	33.6	35.5	33.6	31.6	32.7	1-1/2
M-5	5- 3-62	5-24-62	--	27.2	10.8	10.1	10.4	38.4	34.8	37.0	33.4	31.6	32.7	1/2
M-6	5- 5-62	5-24-62	--	26.3	10.1	10.0	10.1	40.2	36.6	38.8	35.4	34.0	34.7	1-1/2
M-7	5-11-62	5-24-62	--	26.8	10.1	10.0	10.0	39.6	36.6	38.8	34.4	32.0	33.7	1-1/2
Current Machine Average				27.0			10.4			36.9			33.1	
Cumulative Machine Average				27.0			10.1			37.3			34.4	
Machine Factor, %				100.0			102.9			99.0			96.2	
Machine Index, %				99.0			101.9			100.9			99.6	

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE N
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
N-1	4- 1-62	4-25-62		27.2	10.2	9.8	10.0	37.2	33.0	35.0	30.6	28.0	29.3	1-1/2
N-2	4- 1-62	4-25-62		26.6	10.2	9.2	9.7	34.8	31.2	32.5	31.6	30.0	30.6	1-1/2
N-3	4- 2-62	4-25-62		27.4	10.1	9.2	9.8	35.4	30.6	33.2	31.8	29.8	31.2	1-1/2
N-4	4- 2-62	4-25-62		27.5	10.7	9.8	10.2	36.0	33.0	34.4	31.4	29.6	30.4	1-1/2
Current Machine Average				27.2			9.9			33.8			30.4	
Cumulative Machine Average				28.0			10.0			33.5			29.5	
Machine Factor, %				96.9			99.4			100.8			103.0	
Machine Index, %				99.5			96.8			92.5			91.3	

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE O
April and May, 1962

O-1	4- 5-62	4-23-62	---	27.9	11.3	11.0	11.1	39.0	35.4	36.8	34.6	32.6	33.4	1/2
O-2	4-10-62	4-23-62	--	27.4	11.2	10.8	11.0	40.2	35.4	37.3	37.0	32.0	34.7	1/2
O-3	4-13-62	4-23-62	--	27.4	11.2	10.4	10.9	37.2	34.8	36.2	34.0	31.0	32.6	1/2
O-4	4-18-62	4-23-62	--	27.4	11.0	10.4	10.7	37.2	33.0	35.6	33.8	29.8	32.6	1/2
O-5	5- 4-62	5-24-62	--	28.2	11.2	10.5	10.9	41.4	36.0	38.8	37.2	32.4	35.0	1/2
O-6	5-11-62	5-24-62	--	27.4	10.5	10.0	10.1	41.4	37.8	39.5	36.6	33.8	34.8	1/2
O-7	5-16-62	5-24-62	--	27.3	10.8	10.0	10.3	37.8	34.2	36.2	34.6	30.8	32.8	1
O-8	5-18-62	5-24-62	--	26.2	10.1	9.9	10.0	34.8	33.0	34.0	32.0	29.0	30.7	1
Current Machine Average				27.4			10.6			36.8			33.3	
Cumulative Machine Average				27.5			10.3			37.4			34.1	
Machine Factor, %				99.8			103.4			98.4			97.8	
Machine Index, %				100.3			103.7			100.7			100.1	

TABLE XVIII
SUMMARY OF TEST RESULTS FOR MACHINE P
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
P-1	3-19-62	4- 2-62	7	28.0	9.8	9.1	9.5	34.2	30.6	32.2	27.2	25.6	26.2	1-1/2
P-2	3-19-62	4- 2-62	8	28.3	10.0	9.2	9.7	33.6	30.0	31.7	28.2	26.6	27.4	1-1/2
P-3	3-19-62	4- 2-62	9	28.4	10.0	9.2	9.7	32.4	31.2	31.8	28.2	25.6	26.8	1-1/2
P-4	3-19-62	4- 2-62	10	28.7	10.0	9.6	9.8	33.6	28.8	32.0	31.2	27.8	29.2	1-1/2
P-5	4-24-62	5-10-62	11	28.1	11.9	10.8	11.2	36.6	31.2	34.8	34.8	30.0	32.1	1/2
P-6	4-24-62	5-10-62	12	27.4	11.8	10.5	11.1	34.8	31.8	33.0	30.6	28.0	29.8	1/2
P-7	4-24-62	5-10-62	13	28.4	12.3	11.1	11.5	36.6	31.8	33.8	32.0	29.8	30.6	1-1/2
P-8	4-24-62	5-10-62	14	28.2	11.8	11.0	11.5	33.6	30.0	32.3	30.6	28.2	29.7	1-1/2
Current Machine Average				28.2			10.5			32.7			29.0	
Cumulative Machine Average				28.1			9.4			34.0			30.5	
Machine Factor, %				100.4			111.9			96.1			94.9	
Machine Index, %				103.3			102.7			89.4			87.0	

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE Q
April and May, 1962

Q-1	3-26-62	4- 2-62	699	26.3	12.3	10.3	11.7	36.0	34.2	35.0	32.8	30.6	31.6	1
Q-2	3-26-62	4- 2-62	700	26.5	12.0	10.2	11.3	36.0	32.4	34.4	32.8	31.2	31.8	1-1/2
Q-3	4- 9-62	4-16-62	707	26.5	12.0	10.2	11.3	38.4	34.2	36.4	33.6	32.2	32.8	1-1/2
Q-4	4- 9-62	4-16-62	708	26.6	12.0	10.7	11.4	37.2	33.6	35.0	34.4	31.6	33.0	1
Q-5	4-24-62	5- 3-62	715	26.7	12.2	10.8	11.4	39.6	34.2	36.7	34.6	31.6	33.4	1
Q-6	4-24-62	5- 3-62	716	26.8	12.0	10.8	11.6	37.2	33.0	35.0	34.6	33.0	34.0	1/2
Q-7	5- 7-62	5-15-62	723	26.2	12.3	10.4	11.5	39.6	35.4	37.2	34.8	32.8	33.6	1/2
Q-8	5- 7-62	5-15-62	724	26.4	12.3	10.5	11.4	40.8	35.4	38.6	36.0	31.6	33.0	1/2
Current Machine Average				26.5			11.5			36.1			32.9	
Cumulative Machine Average				26.8			11.3			36.1			33.1	
Machine Factor, %				98.7			101.2			100.0			99.3	
Machine Index, %				97.1			112.0			98.6			98.8	

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE R
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
R-1	3-15-62	4-16-62	198	26.6	10.7	10.0	10.2	38.4	34.2	36.0	30.8	29.0	30.1	1
R-2	3-20-62	4-16-62	199	26.2	11.1	10.7	11.0	36.0	33.6	34.8	30.6	28.8	29.6	1
R-3	3-24-62	4-16-62	200	27.7	11.6	10.2	11.0	40.2	32.4	37.4	35.0	31.6	33.1	1-1/2
R-4	4- 4-62	4-16-62	201	26.8	11.2	10.6	11.0	36.6	31.8	33.5	29.0	26.8	27.9	1
R-5	4- 5-62	4-16-62	202	26.9	10.8	10.3	10.6	37.8	33.6	35.3	32.0	30.6	31.2	1-1/2
R-6	4- 9-62	4-16-62	203	26.3	11.0	10.0	10.4	34.2	31.2	32.5	31.0	29.0	29.9	1-1/2
R-7	4-22-62	5-15-62	204	27.0	10.9	10.2	10.6	43.2	36.0	38.3	33.6	31.0	32.0	1/2
R-8	5- 1-62	5-15-62	205	26.9	10.8	10.2	10.5	40.2	33.6	36.7	33.8	31.4	32.6	1-1/2
R-9	5- 5-62	5-15-62	206	27.1	10.8	10.0	10.4	40.2	33.6	35.9	32.2	29.2	31.0	1
Current Machine Average				26.8			10.6			35.6			30.8	
Cumulative Machine Average				26.7			10.4			34.8			31.6	
Machine Factor, %				100.3			102.4			102.2			97.7	
Machine Index, %				98.2			103.8			97.4			92.7	

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE S
April and May, 1962

S-1	3-17-62	3-26-62	488	27.1	9.2	8.8	9.0	39.6	36.6	37.7	33.0	31.0	32.0	1-1/2
S-2	3-20-62	4- 9-62	489	27.4	9.7	9.0	9.2	39.0	34.8	37.0	34.2	30.6	31.8	1-1/2
S-3	4- 1-62	4-10-62	490	26.1	9.0	8.7	9.0	37.8	33.6	36.2	31.4	30.4	31.0	1-1/2
S-4	4-12-62	4-23-62	491	26.7	9.7	9.0	9.2	41.4	37.2	39.5	35.4	33.4	34.6	Min.
S-5	4-13-62	4-23-62	492	25.8	9.6	9.0	9.2	39.6	35.4	38.5	34.8	32.8	33.8	1-1/2
S-6	4-19-62	5- 3-62	493	26.0	9.8	8.8	9.1	38.4	34.2	36.4	34.6	32.0	33.0	Min.
S-7	5- 5-62	5-14-62	494	27.6	9.9	9.3	9.6	39.6	37.8	39.0	38.2	33.4	36.0	1/2
S-8	5- 6-62	5-15-62	495	26.8	9.9	8.9	9.4	39.0	36.6	37.9	35.0	30.0	32.0	1/2
S-9	5- 9-62	5-22-62	496	26.8	10.0	9.1	9.5	37.8	36.0	37.0	35.2	31.4	32.6	Min.
Current Machine Average				26.7			9.3			37.7			33.0	
Cumumlative Machine Average				26.7			9.2			36.0			32.3	
Machine Factor, %				100.0			101.1			104.6			102.2	
Machine Index, %				97.7			90.5			103.0			99.1	

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE T
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
T-1	5- 7-62	5-14-62	1	26.7	9.5	8.3	9.0	41.4	36.0	37.8	37.6	34.6	35.6	1/2
Current Machine Average				26.7			9.0			37.8			35.6	
Cumulative Machine Average				26.6			9.9			33.8			31.4	
Machine Factor, %				100.3			90.5			111.9			113.6	
Machine Index, %				97.7			87.7			103.4			107.1	

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE U
April and May, 1962

U-1	4- 4-62	4-23-62	--	26.3	10.8	10.1	10.4	37.8	36.0	37.0	34.6	32.6	33.6	1/2
U-2	4-11-62	4-23-62	--	26.1	10.9	10.2	10.5	40.2	34.8	37.8	33.8	30.6	32.4	1/2
U-3	4-18-62	4-23-62	--	27.0	10.7	10.0	10.3	42.0	38.4	40.2	35.6	35.2	35.5	1
U-4	4-19-62	4-23-62	--	26.8	10.6	10.1	10.3	39.0	37.2	38.0	35.6	33.8	34.2	1-1/2
U-5	5- 2-62	5-24-62	--	26.5	10.4	10.0	10.1	37.8	34.8	36.4	31.8	29.6	30.8	1/2
U-6	5- 8-62	5-24-62	--	27.0	10.2	9.9	10.0	43.8	36.0	39.4	34.6	33.8	34.1	1
U-7	5-15-62	5-24-62	--	26.8	10.0	9.9	10.0	40.8	36.0	37.9	36.6	32.6	33.8	1
U-8	5-17-62	5-24-62	--	26.0	10.1	9.5	9.9	39.0	32.4	35.6	33.2	31.2	32.3	1-1/2
Current Machine Average				26.6			10.2			37.8			33.4	
Cumulative Machine Average				26.7			10.2			37.7			34.3	
Machine Factor, %				99.6			100.0			100.2			97.3	
Machine Index, %				97.3			99.6			103.3			100.3	

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE V
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
V-1	3-22-62	3-28-62	659	27.6	11.1	10.8	10.9	43.2	40.2	41.4	40.4	35.6	38.1	1-1/2
V-2	4- 7-62	4-12-62	660	26.7	11.7	10.5	11.2	45.0	36.6	40.0	37.6	35.0	36.5	1/2
V-3	4-17-62	4-23-62	661	26.4	11.0	10.4	10.8	40.2	36.0	37.2	37.6	35.0	36.3	1-1/2
V-4	5- 8-62	5-11-62	662	26.8	11.9	10.1	11.1	43.8	40.8	42.4	37.4	35.8	36.6	1-1/2
Current Machine Average				26.9			11.0			40.2			36.9	
Cumulative Machine Average				27.0			10.9			40.0			36.2	
Machine Factor, %				99.7			101.2			100.5			102.0	
Machine Index, %				98.4			107.4			110.0			110.8	

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE W
April and May, 1962

W-1	3-19-62	4- 2-62	355	27.9	12.0	11.7	11.9	42.6	37.8	40.1	38.0	34.6	35.7	1-1/2
W-2	3-27-62	4-23-62	356	28.0	11.8	11.2	11.6	39.0	35.4	37.2	33.6	32.0	33.1	1/2
W-3	4- 5-62	4-23-62	357	28.2	12.7	11.9	12.1	40.2	35.4	38.2	37.4	34.4	35.9	1
W-4	4-11-62	4-23-62	358	28.4	12.5	11.8	12.1	39.6	38.4	39.0	37.6	34.2	35.5	1
W-5	4-16-62	4-23-62	359	28.0	12.5	11.7	12.1	38.4	34.2	37.2	37.2	34.6	35.7	1
W-6	4-24-62	5-14-62	360	28.0	11.7	11.1	11.4	40.2	36.0	38.2	37.2	33.0	34.8	1/2
W-7	5- 2-62	5-14-62	361	28.3	12.1	11.8	12.0	40.2	34.2	38.3	35.8	32.4	33.7	1/2
Current Machine Average				28.1			11.9			38.3			34.9	
Cumulative Machine Average				28.1			11.0			40.4			37.3	
Machine Factor, %				100.0			108.3			94.7			93.7	
Machine Index, %				103.0			116.0			104.7			105.0	

TABLE XXVI

SUMMARY OF TEST RESULTS FOR MACHINE X
April and May, 1962

Code	Date Made	Date Received	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.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
X-1	3-26-62	4- 2-62	693	27.0	10.3	10.0	10.2	39.0	31.8	36.2	33.4	31.2	32.6	1-1/2
X-2	3-26-62	4- 2-62	694	26.9	10.8	9.9	10.2	39.6	36.6	38.2	33.8	31.6	32.7	1/2
X-3	4- 4-62	4-10-62	701	27.1	10.8	10.0	10.2	42.0	36.6	39.1	34.2	32.6	33.5	1-1/2
X-4	4- 4-62	4-10-62	702	26.3	10.5	9.8	10.1	40.8	33.0	36.8	33.0	30.4	31.6	1-1/2
X-5	4-17-62	4-23-62	709	27.2	11.2	10.5	11.0	37.8	31.8	35.4	32.0	29.0	30.4	1-1/2
X-6	4-17-62	4-23-62	710	26.8	11.0	10.3	10.6	36.6	33.0	35.3	32.8	28.8	30.6	1-1/2
X-7	5- 8-62	5-15-62	717	26.7	10.2	9.9	10.1	44.4	37.2	39.6	37.2	33.0	35.5	1-1/2
X-8	5- 8-62	5-15-62	718	26.7	10.2	9.6	10.0	41.4	36.6	39.5	35.6	30.6	34.2	1-1/2
Current Machine Average				26.8			10.3			37.5			32.6	
Cumulative Machine Average				27.2			10.1			36.9			32.3	
Machine Factor, %				98.5			101.7			101.7			101.1	
Machine Index, %				98.2			100.6			102.6			98.1	

TABLE XXVII

SUMMARY OF TEST RESULTS FOR MACHINE Y
April and May, 1962

Y-1	2-20-62	3-28-62	B-16	26.0	11.0	9.8	10.2	37.8	33.6	35.3	33.2	31.2	32.0	1-1/2
Current Machine Average				26.0			10.2			35.3			32.0	
Cumulative Machine Average				--			--			--			--	
Machine Factor, %				--			--			--			--	
Machine Index, %				95.4			99.6			96.5			96.2	

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 XXVII 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.

DISCUSSION OF RESULTS

Shown below from Table II are the maximum and minimum current machine averages noted for each test during the current period (April and May, 1962); the current machine average is the average of the results obtained on all rolls submitted from a given machine during the current period. Also given for each test is the current F.K.I. average which is determined by averaging the current machine averages for the current period and is indicative of the test level being maintained by the industry as a whole to the extent that the industry is represented by the participating machines: 12 M Jones

	Maximum Current Machine Average	Minimum Current Machine Average	Current F.K.I. Average
Basis wt., lb.	28.2	26.0	27.0
Caliper, pt.	11.9	9.0	10.3
Concora flat crush, p.s.i.	40.2	31.7	36.7
Single-face flat crush, p.s.i.	36.9	29.0	33.1

The runnability data for the 170 rolls evaluated during the current period are summarized as follows:

Runnability	Number of Rolls	Percentage of Total Rolls
Less than 600 f.p.m. with minimum tension	0	0.0
600 f.p.m.--minimum tension	9	5.3
600 f.p.m.--1/2 lb. per in. tension	33	19.4
600 f.p.m.--1 lb. per in. tension	27	15.9
600 f.p.m.--1-1/2 lb. per in. tension	101	59.4

In Table XXVIII a comparison of Institute and mill Concora flat crush test results obtained on conditioned specimens is given for each machine for the current period. These comparisons permit interested participants to submit their Concora flat crush test results to The Institute of Paper Chemistry so that comparative results may be included in the monthly reports. Data sheets for supplying this information may be obtained from the Institute. Comparisons of this kind are a helpful adjunct to other calibration procedures. Shown in Table XXVIII are the Institute and mill Concora averages for each roll included in these comparisons, the difference between the roll average based on Institute data and that based on mill data, the Institute and mill averages based on all rolls included in the comparison, and the difference between these over-all averages.

The Concora flat crush data shown in Table XXVIII are summarized in Part I of Table XXIX where for each machine the following information is given: (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 that based on mill data and (4) the maximum difference encountered in comparing Institute and mill test averages for individual rolls. In Part II of Table XXIX the average differences given in Part I have been converted to per cent. Comparative data from the previous two reports are also included in Part II of Table XXIX. It may be seen in Part II of Table XXIX that, for the current period, the highest average difference of 11.7% was associated with Machine F and the lowest of 0.5% with Machines O and V.

In Table XXX a summary of the agreement between Institute and mill Concora flat crush data is given for the current period, and comparative data from the previous bimonthly period are also included. The data shown for the current period indicate that agreement between Institute and mill Concora data

TABLE XXVIII

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR APRIL AND MAY, 1962

Machine A

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
A-1	781	3-24-62	36.5	36.6	+0.1
A-2	260	4-10-62	36.1	37.7	+1.6
A-3	619	4-20-62	36.6	38.0	+1.4
A-4	766	4-24-62	37.7	37.1	-0.6
A-5	801	4-25-62	38.5	41.0	+2.5
A-6	877	4-27-62	39.1	39.4	+0.3
A-7	197	5- 7-62	35.4	38.8	+3.4
Current Machine Av.			37.1	38.4	+1.3

Machine B

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
B-1	4095	3-21-62	40.3	35.2	-5.1
B-2	4718	3-23-62	39.0	34.4	-4.6
B-3	5338	3-26-62	37.8	34.4	-3.4
B-4	1811	4- 9-62	35.0	35.5	+0.5
B-5	2344	4-11-62	38.3	36.4	-1.9
B-6	4713	4-23-62	38.9	35.1	-3.8
B-7	960	5- 5-62	35.4	36.1	+0.7
Current Machine Av.			37.8	35.3	-2.5

Machine C

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
C-1	697	3-27-62	35.4	32.4	-3.0
C-2	698	3-27-62	34.1	33.8	-0.3
C-3	705	4-12-62	36.0	35.8	-0.2
C-4	706	4-12-62	37.9	36.5	-1.4
C-5	713	4-27-62	37.1	34.7	-2.4
C-6	714	4-27-62	37.3	35.2	-2.1
C-7	721	5-11-62	36.2	34.7	-1.5
C-8	722	5-11-62	36.2	36.8	+0.6
Current Machine Av.			36.3	35.0	-1.3

Machine D

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
D-1	11	3-19-62	35.4	38.9	+3.5
D-2	12	3-25-62	34.7	35.4	+0.7
D-3	13	3-31-62	34.0	34.4	+0.4
D-4	14	4-10-62	34.2	34.3	+0.1
D-5	15	4-14-62	34.9	36.1	+1.2
D-6	16	4-23-62	32.5	32.0	-0.5
D-7	17	4-28-62	32.5	34.1	+1.6
D-8	18	5-14-62	36.5	36.0	-0.5
Current Machine Av.			34.3	35.2	+0.9

Machine E

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
E-1	487	3-11-62	37.0	40.0	+3.0
E-2	488	3-12-62	38.3	39.9	+1.6
E-3	489	4- 2-62	38.3	41.4	+3.1
E-4	490	4- 4-62	40.3	40.6	+0.3
E-5	491	4-16-62	39.1	37.7	-1.4
E-6	492	4-18-62	37.9	40.2	+2.3
E-7	493	5- 1-62	38.3	40.1	+1.8
Current Machine Av.			38.5	40.0	+1.5

Machine F

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
F-1	47	2- 6-62	30.2	35.2	+5.0
F-2	48	2-12-62	32.6	38.8	+6.2
F-3	49	2-14-62	34.3	38.8	+4.5
F-4	50	2-23-62	33.8	38.0	+4.2
F-5	51	2-28-62	34.0	36.2	+2.2
F-6	52	3- 6-62	32.2	35.5	+3.3
F-7	53	3-12-62	30.7	33.0	+2.3
F-8	54	3-14-62	30.7	35.4	+4.7
F-9	55	3-17-62	30.8	35.3	+4.5
F-10	56	3-20-62	30.1	33.1	+3.0
F-11	57	3-23-62	29.4	29.8	+0.4
Current Machine Av.			31.7	35.4	+3.7

Machine H

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
H-1	307	3-20-62	38.5	39.5	+1.0
H-2	308	3-30-62	38.6	38.4	-0.2
H-3	309	4- 4-62	37.3	37.8	+0.5
H-4	310	4-12-62	37.4	39.6	+2.2
H-5	311	4-17-62	36.8	39.6	+2.8
H-6	312	5- 4-62	39.1	42.0	+2.9
H-7	313	5- 8-62	38.8	38.0	-0.8
Current Machine Av.			38.1	39.3	+1.2

Machine L

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
L-1	11	3-19-62	37.3	40.4	+3.1
L-2	12	3-25-62	40.4	39.8	-0.6
L-3	13	3-31-62	35.6	36.2	+0.6
L-4	14	4- 7-62	37.3	38.2	+0.9
L-5	15	4-14-62	32.3	35.4	+3.1
L-6	16	4-23-62	40.1	41.0	+0.9
L-7	17	4-27-62	34.1	36.4	+2.3
L-8	18	5-14-62	37.8	31.8	-6.0
Current Machine Av.			36.9	37.4	+0.5

Machine M

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
M-1	--	4- 3-62	36.6	35.4	-1.2
M-2	--	4-13-62	36.4	37.7	+1.3
M-3	--	4-14-62	35.4	36.5	+1.1
M-4	--	4-19-62	35.5	35.0	-0.5
M-5	--	5- 3-62	37.0	35.0	-2.0
M-6	--	5- 5-62	38.8	36.8	-2.0
M-7	--	5-11-62	38.8	36.1	-2.7
Current Machine Av.			36.9	36.1	-0.8

[a]This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXVIII (Continued)

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR APRIL AND MAY, 1962

Machine O						Machine P						Machine Q					
			Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.		
Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]
O-1	--	4- 5-62	36.8	35.0	-1.8	P-1	7	3-19-62	32.2	31.6	-0.6	Q-1	699	3-26-62	35.0	31.3	-3.7
O-2	--	4-10-62	37.3	36.5	-0.8	P-2	8	3-19-62	31.7	31.6	-0.1	Q-2	700	3-26-62	34.4	35.9	+1.5
O-3	--	4-13-62	36.2	39.2	+3.0	P-3	9	3-19-62	31.8	31.8	0.0	Q-3	707	4- 9-62	36.4	35.8	-0.6
O-4	--	4-18-62	35.6	37.0	+1.4	P-4	10	3-19-62	32.0	29.3	-2.7	Q-4	708	4- 9-62	35.0	29.5	-5.5
O-5	--	5- 4-62	38.8	37.3	-1.5	P-5	11	4-24-62	34.8	34.4	-0.4	Q-5	715	4-24-62	36.7	33.8	-2.9
O-6	--	5-11-62	39.5	37.4	-2.1	P-6	12	4-24-62	33.0	35.9	+2.9	Q-6	716	4-24-62	35.0	33.6	-1.4
O-7	--	5-16-62	36.2	35.0	-1.2	P-7	13	4-24-62	33.8	35.3	+1.5	Q-7	723	5- 7-62	37.2	32.6	-4.6
O-8	--	5-18-62	34.0	35.2	+1.2	P-8	14	4-24-62	32.3	34.1	+1.8	Q-8	724	5- 7-62	38.6	35.0	-3.6
Current Machine Av.			36.8	36.6	-0.2	Current Machine Av.			32.7	33.0	+0.3	Current Machine Av.			36.1	33.4	-2.7

Machine R						Machine S						Machine U					
R-1	198	3-15-62	36.0	35.2	-0.8	S-1	488	3-17-62	37.7	38.2	+0.5	U-1	--	4- 4-62	37.0	39.0	+2.0
R-2	199	3-20-62	34.8	36.2	+1.4	S-2	489	3-20-62	37.0	37.5	+0.5	U-2	--	4-11-62	37.8	37.4	-0.4
R-3	200	3-24-62	37.4	36.1	-1.3	S-3	490	4- 1-62	36.2	36.7	+0.5	U-3	--	4-18-62	40.2	41.0	+0.8
R-4	201	4- 4-62	33.5	36.8	+3.3	S-4	491	4-12-62	39.5	40.3	+0.8	U-4	--	4-19-62	38.0	38.4	+0.4
R-5	202	4- 5-62	35.3	34.8	-0.5	S-5	492	4-13-62	38.5	39.6	+1.1	U-5	--	5- 2-62	36.4	36.8	+0.4
R-6	203	4- 9-62	32.5	36.4	+3.9	S-6	493	4-19-62	36.4	38.1	+1.7	U-6	--	5- 8-62	39.4	35.6	-3.8
R-7	204	4-22-62	38.3	36.8	-1.5	S-7	494	5- 5-62	39.0	39.5	+0.5	U-7	--	5-15-62	37.9	36.0	-1.9
						S-8	495	5- 6-62	37.9	40.0	+2.1	U-8	--	5-17-62	35.6	35.6	0.0
						S-9	496	5- 9-62	37.0	36.7	-0.3						
Current Machine Av.			35.4	36.0	+0.6	Current Machine Av.			37.7	38.5	+0.8	Current Machine Av.			37.8	37.5	-0.3

Machine V						Machine W						Machine X					
V-1	659	3-22-62	41.4	42.0	+0.6	W-1	355	3-19-62	40.1	38.8	-1.3	X-1	693	3-26-62	36.2	39.1	+2.9
V-2	660	4- 7-62	40.0	39.7	-0.3	W-2	356	3-27-62	37.2	37.0	-0.2	X-2	694	3-26-62	38.2	40.5	+2.3
V-3	661	4-17-62	37.2	38.8	+1.6	W-3	357	4- 5-62	38.2	38.6	+0.4	X-3	701	4- 4-62	39.1	39.6	+0.5
V-4	662	5- 8-62	42.4	41.2	-1.2	W-4	358	4-11-62	39.0	39.1	+0.1	X-4	702	4- 4-62	36.8	36.2	-0.6
						W-5	359	4-16-62	37.2	36.6	-0.6	X-5	709	4-17-62	35.4	36.5	+1.1
						W-6	360	4-24-62	38.2	37.0	-1.2	X-6	710	4-17-62	35.3	35.9	+0.6
						W-7	361	5- 2-62	38.3	38.8	+0.5	X-7	717	5- 8-62	39.6	37.7	-1.9
												X-8	718	5- 8-62	39.5	37.2	-2.3
Current Machine Av.			40.2	40.4	+0.2	Current Machine Av.			38.3	38.0	-0.3	Current Machine Av.			37.5	37.8	+0.3

[a]This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXIX

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

Machine Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
Number of Rolls Compared	7	7	8	8	7	11	0	7	0	0	0	8	7	0	8	8	8	7	9	0	8	4	7	8	0
Concora Flat Crush, p.s.i.																									
Current Machine Av. (Institute)[a]	37.1	37.8	36.3	34.3	38.5	31.7	--	38.1	--	--	--	36.9	36.9	--	36.8	32.7	36.1	35.4	37.7	--	37.8	40.2	38.3	37.5	--
Current Machine Av. (Mill)[a]	38.4	35.3	35.0	35.2	40.0	35.4	--	39.3	--	--	--	37.4	36.1	--	36.6	33.0	33.4	36.0	38.5	--	37.5	40.4	38.0	37.8	--
Average Difference[b]	+1.3	-2.5	-1.3	+0.9	+1.5	+3.7	--	+1.2	--	--	--	+0.5	-0.8	--	-0.2	+0.3	-2.7	+0.6	+0.8	--	-0.3	+0.2	-0.3	+0.3	--
Maximum Difference[c]	+3.4	-5.1	-3.0	+3.5	+3.1	+6.2	--	+2.9	--	--	--	-6.0	-2.7	--	+3.0	+2.9	-5.5	+3.9	+2.1	--	-3.8	+1.6	-1.3	+2.9	--

PART II: A TABULATION FOR EACH MACHINE OF THE AVERAGE DIFFERENCE (PER CENT) BETWEEN THE CONCORA FLAT CRUSH BASED ON INSTITUTE DATA AND THAT BASED ON MILL DATA

Average Difference, %[d]																									
Current Report (April and May)	+3.5	-6.6	-3.6	+2.6	+3.9	+11.7	--	+3.1	--	--	--	+1.4	-2.2	--	-0.5	+0.9	-7.5	+1.7	+2.1	--	-0.8	+0.5	-0.8	+0.8	--
94th Report (Feb. and March)	+2.5	-1.4	-3.3	+6.1	+3.2	+5.3	--	+3.1	--	--	--	+5.1	-0.3	--	+1.4	+4.1	-4.1	+1.1	+4.7	--	+0.5	0.0	-1.8	+3.3	--
93rd Report (Dec. and Jan.)	+5.2	-5.9	-2.3	+5.5	+2.1	+1.5	+5.0	+3.3	--	--	--	+0.8	-0.5	-4.0	-1.9	-8.3	-0.6	+2.6	+7.3	--	+0.5	+1.9	-1.3	+4.8	--

[a] Comparisons based on current machine average include only those rolls for which mill data were submitted.

[b] 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. See Table XXVIII.

[c] Maximum difference is the greatest difference encountered in comparing Institute and mill test averages for individual rolls. See Table XXVIII.

[d] Average difference (per cent) is computed by dividing the average difference in p.s.i. (shown above in Part I of this table) by the Institute current machine average and multiplying the result by 100.

was good. It may be seen in Table XXX that, for the current period, 33.3% of the comparisons of Institute and mill data differed by 1% or less, 55.6% of the comparisons differed by 2.5% or less, and 83.3% of the comparisons differed by 5% or less. For the current period, agreement at these levels is equal to or slightly better than the agreement for the previous period. Maximum percentage difference of 11.7% noted for the current period was somewhat higher than the maximum difference of 6.1% noted for the previous period. However, these figures involve only one machine for each period from a total of eighteen machines.

TABLE XXX

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL
CONCORA FLAT CRUSH DATA

Average Percentage Difference Between Institute and Mill Concora Flat Crush Test Results[a]	Percentage of All Machines Included Within the Indicated Range	
	Previous Period[b]	Current Period[c]
± 1.0	16.7	33.3
± 2.5	44.4	55.6
± 5.0	83.3	83.3
±10.0	100.0[d]	94.4
±11.7		100.0

[a] The average obtained at the Institute was used as the reference in the calculation of the percentage differences.
[b] February and March, 1962.
[c] April and May, 1962.
[d] Maximum percentage difference was 6.1.

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