

THE INSTITUTE OF PAPER CHEMISTRY, APPLETON, WISCONSIN

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR NOVEMBER AND DECEMBER, 1975)

Project 2694-2

Report Eighteen

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

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

February 25, 1976

BASE-LINE
NOVEMBER-DECEMBER, 1975

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR NOVEMBER AND DECEMBER, 1975)

SUMMARY OF 26-LB CORRUGATING MEDIUM DATA
(SEPTEMBER-DECEMBER, 1975)

Test		September	October	November	December
Moisture content, %	Max. ^a	9.2	9.1	9.3	9.1
	Min. ^a	3.6	3.9	3.5	3.6
	Av. ^b	6.2 (29)	6.2 (29)	6.2 (29)	6.3 (32)
Adj. basis weight, lb/M ft ²	Max. ^a	27.5	27.6	27.9	27.6
	Min. ^a	25.6	25.8	25.8	25.8
	Av. ^b	26.4 (29)	26.5 (29)	26.4 (29)	26.5 (32)
Caliper, pt.	Max. ^a	11.8	11.3	11.5	11.8
	Min. ^a	8.9	9.0	9.0	8.7
	Av. ^b	9.9 (29)	9.9 (29)	10.0 (29)	10.1 (31)
Concora, psi	Max. ^a	47.8	47.3	44.8	47.2
	Min. ^a	35.0	35.3	34.3	35.0
	Av. ^b	38.7 (29)	38.8 (29)	38.7 (29)	38.8 (32)

^aCurrent machine average.

^bCurrent F.K.I. average, number of machines is indicated in parentheses.

INTRODUCTION

The continuous-base line study (modified) is a compilation of monthly averages of mill test data obtained routinely on 26-lb corrugating medium manufactured in the members mills of F.K.B.I., Inc. Mill data are included for moisture content, basis weight, caliper, and Concora made on the production of individual machines which produced at least 500 tons of this grade weight during a given month.

PRESENTATION OF DATA

For the 26-lb grade weight of corrugating medium referred to earlier, data on conditioning and testing environments, mill test averages for moisture content, adjusted basis weight, caliper, and concora results are compiled in the following tables.

Table Number	Description
I	Data on Conditioning and Testing Environments
II-III	Mill Test Averages on 26-lb Corrugating Medium

The procedures used in calculating cumulative machine averages, machine factors, machine indexes, and F.K.I. indexes are described in the Appendix.

It should be explained that the number of machines for which data are compiled in each table for a specified month varies for these reasons: a machine must have (a) produced at least 500 tons of 26-lb corrugating medium during the specified month, or (b) produced 500 tons of 26-lb corrugating medium during any one or more of the 12 months prior to the specified month (so that a cumulative average is available), to be included in a given table.

TABLE I
 DATA ON CONDITIONING AND TESTING ENVIRONMENTS
 NOVEMBER AND DECEMBER, 1975

Code	Conditioning Environment			Testing Environment
	Are Quality Samples Conditioned Before Testing?	Time	Temp., °F	Are Quality Samples Tested Under Controlled Conditions of Temperature and Humidity?
A1	No	--	--	No
B1	No	--	--	No
C1	No	--	--	Yes: 73 ± 1°F; 50 ± 2% RH
D1	No	--	--	No
E1	No	--	--	No
F1	No	--	--	No
G1	No	--	--	Yes: 73 ± 2°F; 50 ± 2% RH
H1	No	--	--	No
I1	No	--	--	Yes: 73 ± 3°F; 50 ± 2% RH
J1	No	--	--	No
K1	No	--	--	No
L1	No data submitted for November and December			
M1	Yes	20 Min	--	Yes: 73 ± 2°F; 50 ± 2% RH
N1	No data submitted for November and December			
O1	No	--	--	Yes: 73 ± 1°F; 50 ± 2% RH
P1	No	--	--	Yes: 73 ± 3°F; 50 ± 2% RH
Q1	No	--	--	Yes: 73 ± 3.5°F; 50 ± 2% RH
R1	No	--	--	No
S1	No	--	--	Yes: 73 ± 2°F; 50 ± 2% RH
T1	Yes	--	--	Yes: 73 ± 2°F; 50 ± 5% RH
U1	No	--	--	No
V1	Yes	20 Min	--	Yes: 72 ± 2°F; 50 ± 2% RH
W1	No	--	--	No
X1	No	--	--	Yes: 73 ± 2°F; 50 ± 2% RH
Y1	No	--	--	No
Z1	No	--	--	No
A2	No data submitted for November and December			
B2	No	--	--	No
C2	No	--	--	No
D2	No	--	--	No
E2	No	--	--	Yes: 73 ± 3°F; 50 ± 2% RH
F2	No	--	--	No
G2	No	--	--	Yes: 72 ± 2°F; 50 ± 2% RH
H2	No	--	--	No
I2	No	--	--	Yes: 72 ± 2°F; 50 ± 5% RH

TABLE II
AVERAGES OF ROUTINE MILL QUALITY CONTROL DATA FOR 26 LB. CORRUGATING MEDIUM
NOVEMBER, 1975

CODE	MOISTURE CONTENT, PERCENT				ADJ. BASIS WT.,*A LB./ M SQ. FT.				CALIPER, PT.				CONCORA TEST, P.S.I.			
	MACHINE DATA				MACHINE DATA				MACHINE DATA				MACHINE DATA			
	CUR. AV.	CUM. AV.	FACT. *B	IND. *C	CUR. AV.	CUM. AV.	FACT. *B	IND. *C	CUR. AV.	CUM. AV.	FACT. *B	IND. *C	CUR. AV.	CUM. AV.	FACT. *B	IND. *C
A1	4.9	3.8	128.9	80.3	27.0	27.4	98.5	101.9	9.2	9.6	95.8	92.9	36.8	35.5	103.7	96.1
B1	6.1	6.1	100.0	100.0	26.1	26.5	98.5	98.5	11.5	11.6	99.1	116.2	36.5	36.3	100.6	95.3
C1	7.0	6.9	101.4	114.8	26.1	26.1	100.0	98.5	10.0	9.9	101.0	101.0	42.2	42.1	100.2	110.2
D1	6.3	6.0	105.0	103.3	26.3	27.1	97.0	99.2	9.9	10.0	99.0	100.0	40.8	38.1	107.1	106.5
E1	9.3	9.1	102.2	152.4	25.8	25.8	100.0	97.4	10.8	10.8	100.0	109.1	44.1	40.6	108.6	115.1
F1		5.2				26.2				9.6				38.0		
G1	6.9	6.8	101.5	113.1	26.4	26.4	100.0	99.6	10.5	10.5	100.0	106.1	37.0	37.4	98.9	96.6
H1	6.2	5.9	105.1	101.6	26.4	26.6	99.2	99.6	9.3	9.4	98.9	93.9	38.2	38.9	98.2	99.7
I1	3.5	3.8	92.1	57.4	27.9	27.2	102.6	105.3	9.0	9.0	100.0	90.9	38.0	38.1	99.7	99.2
J1	6.5	6.6	98.5	106.6	26.0	26.0	100.0	98.1	10.3	10.2	101.0	104.0	40.8	41.4	98.6	106.5
K1	6.2	5.7	108.8	101.6	26.4	26.8	98.5	99.6	9.5	9.8	96.9	96.0	40.8	38.6	105.7	106.5
L1		6.1				26.1				9.4				35.1		
M1	6.0	6.0	100.0	98.4	27.3	27.2	100.4	103.0	9.9	9.8	101.0	100.0	37.3	37.8	98.7	97.4
N1		5.2				26.7				9.2				39.0		
O1	5.7	5.5	103.6	93.4	26.2	26.2	100.0	98.9	11.1	11.0	100.9	112.1	38.0	38.3	99.2	99.2
P1	6.1	5.8	105.2	100.0	26.4	26.3	100.4	99.6	10.0	9.6	104.2	101.0	42.1	41.9	100.5	109.9
Q1	5.6	5.7	98.2	91.8	26.6	26.6	100.0	100.4	9.0	9.1	98.9	90.9	40.3	39.0	103.3	105.2
R1	7.9	7.7	102.6	129.5	26.2	26.0	100.8	98.9	11.4	10.4	109.6	115.2	36.9	37.0	99.7	96.3
S1	6.7	7.0	95.7	109.8	26.5	26.5	100.0	100.0	10.3	9.9	104.0	104.0	37.2	37.5	99.2	97.1
T1	6.2	6.1	101.6	101.6	26.5	26.6	99.6	100.0	10.4	10.1	103.0	105.0	37.9	37.0	102.4	99.0
U1		6.8				25.8				10.6				35.0		
V1	7.0	6.4	109.4	114.8	26.1	26.2	99.6	98.5	9.7	9.8	99.0	98.0	36.1	36.2	99.7	94.2
W1	6.4	6.4	100.0	104.9	26.3	26.2	100.4	99.2	10.5	10.6	99.0	106.1	36.0	34.4	104.6	94.0
X1	6.7	6.9	97.1	109.8	26.4	26.4	100.0	99.6	10.6	10.6	100.0	107.1	37.0	37.1	99.7	96.6
Y1	5.6	5.5	101.8	91.8	26.9	27.2	98.9	101.5	10.8	11.0	98.2	109.1	39.5	39.1	101.0	103.1
Z1	5.0	5.7	87.7	82.0	26.1	26.1	100.0	98.5	9.2	9.4	97.9	92.9	38.4	39.7	96.7	100.3
A2		6.1				26.3				9.5				35.7		
B2	6.5	6.9	94.2	106.6	26.1	26.5	98.5	98.5	10.5	9.7	108.2	106.1	38.6	38.6	100.0	100.8
C2	6.2	6.0	103.3	101.6	26.4	26.4	100.0	99.6	9.2	9.5	96.8	92.9	37.2	37.1	100.3	97.1
D2	6.6	6.2	106.4	108.2	26.5	26.6	99.6	100.0	9.3	9.4	98.9	93.9	44.8	45.8	97.8	117.0
E2	6.0	6.1	98.4	98.4	26.3	26.4	99.6	99.2	9.0	9.2	97.8	90.9	37.6	37.2	101.1	98.2
F2	4.1	3.8	107.9	67.2	27.0	27.0	100.0	101.9	9.0	9.2	97.8	90.9	34.3	34.9	98.3	89.6
G2	7.3	7.3	100.0	119.7	26.4	26.4	100.0	99.6	10.9	11.1	98.2	110.1	37.7	38.2	98.7	98.4
H2	6.5	6.4	101.6	106.6	26.5	26.6	99.6	100.0	9.0	9.0	100.0	90.9	39.6	39.3	100.8	103.4
FKI DATA																
CUR.																
AV.	6.2				26.4				10.0				38.7			
CUM.																
AV.	6.1				26.5				9.9				38.3			
IND.																
*D	101.6				99.6				101.0				101.0			

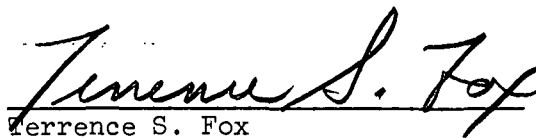
NOTE- NOTES A, B, C, AND D, ARE GIVEN IN APPENDIX.

TABLE III
AVERAGES OF ROUTINE MILL QUALITY CONTROL DATA FOR 26 LB. CORRUGATING MEDIUM
DECEMBER, 1975

CODE	MOISTURE CONTENT, PERCENT				ADJ. BASIS WT.,*A LB./ M SQ. FT.				CALIPER, PT.				CONCORR TEST, P.S.I.			
	MACHINE DATA				MACHINE DATA				MACHINE DATA				MACHINE DATA			
	CUR. AV.	CUM. AV.	FACT. *B	IND. *C	CUR. AV.	CUM. AV.	FACT. *B	IND. *C	CUR. AV.	CUM. AV.	FACT. *B	IND. *C	CUR. AV.	CUM. AV.	FACT. *B	IND. *C
A1	5.0	4.0	125.0	82.0	26.9	27.4	98.2	101.5	9.1	9.6	94.8	91.9	36.7	35.9	102.2	95.6
B1	6.2	6.1	101.6	101.6	25.9	26.4	98.1	97.7	11.8	11.6	101.7	119.2	36.6	36.4	100.5	95.3
C1	7.0	6.9	101.4	114.8	26.1	26.1	100.0	98.5	9.9	9.9	100.0	100.0	42.5	42.4	100.2	110.7
D1	6.1	6.0	101.7	100.0	26.3	27.0	97.4	99.2	10.0	10.0	100.0	101.0	40.2	38.5	104.4	104.7
E1	9.1	9.1	100.0	149.2	25.8	25.8	100.0	97.4	10.6	10.8	98.1	107.1	47.2	41.1	114.8	122.9
F1	5.4	5.3	101.9	88.5	26.6	26.2	101.5	100.4	9.9	9.8	101.0	100.0	38.3	38.1	100.5	99.7
G1	7.0	6.8	102.9	114.8	26.3	26.4	99.6	99.2	10.7	10.5	101.9	108.1	36.0	37.6	95.7	93.8
H1	6.5	6.0	108.3	106.6	26.4	26.6	99.2	99.6	9.7	9.4	103.2	98.0	37.8	39.1	96.7	98.4
I1	3.6	3.7	97.3	59.0	27.4	27.3	100.4	103.4	8.9	9.0	98.9	89.9	37.4	38.1	98.2	97.4
J1	6.7	6.6	101.5	109.8	25.9	26.0	99.6	97.7	10.3	10.2	101.0	104.0	41.4	41.4	100.0	107.8
K1	6.3	5.8	108.6	103.3	26.2	26.7	98.1	98.9	9.6	9.8	98.0	97.0	40.8	38.9	104.9	106.2
L1		6.0				26.2					9.4			36.4		
M1	5.8	6.0	96.7	95.1	27.4	27.2	100.7	103.4	9.8	9.8	100.0	99.0	38.0	37.8	100.5	99.0
N1		5.2				26.7					9.2			39.5		
O1	5.6	5.5	101.8	91.8	26.2	26.2	100.0	98.9	11.1	11.0	100.9	112.1	38.0	38.3	99.2	99.0
P1	6.5	5.9	110.2	106.6	26.4	26.3	100.4	99.6	10.1	9.6	105.2	102.0	43.2	41.9	103.1	112.5
Q1	5.7	5.7	100.0	93.4	26.6	26.6	100.0	100.4	8.7	9.1	95.6	87.9	40.2	39.4	102.0	104.7
R1	7.5	7.7	97.4	123.0	26.0	26.0	100.0	98.1	10.9	10.5	103.8	110.1	36.8	37.0	99.4	95.8
S1	6.7	6.9	97.1	109.8	26.7	26.5	100.8	100.8	10.6	9.9	107.1	107.1	36.0	37.6	95.7	93.8
T1	6.2	6.2	100.0	101.6	26.7	26.6	100.4	100.8	10.6	10.2	103.9	107.1	36.0	37.1	97.0	93.8
U1	6.3	6.8	92.6	103.3	26.1	25.8	101.2	98.5	10.9	10.6	102.8	110.1	38.4	35.0	109.7	100.0
V1	6.9	6.4	107.8	113.1	26.5	26.2	101.1	100.0	10.0	9.8	102.0	101.0	36.1	36.4	99.2	94.0
W1	6.5	6.4	101.6	106.6	26.4	26.2	100.8	99.6	10.7	10.6	100.9	108.1	35.0	34.8	100.6	91.1
X1	7.4	6.8	108.8	121.3	26.2	26.4	99.2	98.9	10.8	10.6	101.9	109.1	35.0	37.3	93.8	91.1
Y1	5.4	5.6	96.4	88.5	26.7	27.0	98.9	100.8	10.8	10.9	99.1	109.1	40.9	39.3	104.1	106.5
Z1	5.5	5.6	98.2	90.2	26.2	26.1	100.4	98.9	9.1	9.3	97.8	91.9	40.8	39.5	103.3	106.2
A2		6.1				26.3					9.5			36.6		
B2	6.6	6.9	95.6	108.2	26.7	26.5	100.8	100.8	10.8	9.9	109.1	109.1	39.7	38.5	103.1	103.4
C2	6.3	6.0	105.0	103.3	26.3	26.4	99.6	99.2	9.2	9.4	97.9	92.9	37.7	37.2	101.3	98.2
D2	6.1	6.2	98.4	100.0	26.6	26.5	100.4	100.4	9.5	9.4	101.1	96.0	45.8	45.7	100.2	119.3
E2	6.0	6.1	98.4	98.4	26.3	26.4	99.6	99.2	9.0	9.2	97.8	90.9	36.8	37.4	98.4	95.8
F2	4.3	3.9	110.2	70.5	27.0	27.0	100.0	101.9	9.0	9.2	97.8	90.9	35.2	35.1	100.3	91.7
G2	6.9	7.3	94.5	113.1	27.6	26.4	104.5	104.2	11.5	11.1	103.6	116.2	37.7	38.1	99.0	98.2
H2	6.5	6.4	101.6	106.6	26.4	26.6	99.2	99.6	9.0	9.0	100.0	90.9	39.0	39.4	99.0	101.6
I2	6.8			111.5	26.6			100.4					39.1			101.8
FKI DATA																
	CUR.															
	AV.	6.3			26.5				10.1				38.8			
	CUM.															
	AV.	6.1			26.5				9.9				38.4			
	IND.															
	*D	103.3			100.0				102.0				101.0			

NOTE- NOTES A, B, C, AND D, ARE GIVEN IN APPENDIX.

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A handwritten signature in cursive script that reads "Terrence S. Fox". The signature is written in dark ink and is positioned above a horizontal line.

Terrence S. Fox
Director
Container Division

APPENDIX

NOTES A, B, C, AND D, USED IN TABULATIONS OF MILL DATA

Notes A, B, C, and D, used in the tables of mill data are given below; these notes define the procedure used in calculating adjusted basis weight, machine factor, machine index, and F.K.I. index. It should be stressed that each formula is applicable only to a specific physical property of a specific grade weight of linerboard.

Note A: Adjusted basis weight (ABW) = reported weight (RBW) adjusted to moisture content of 7.8%:

$$ABW = RBW \left[\frac{(100 - \text{reported moisture content, \%})}{(100 - 7.8)} \right]$$

Note B: Machine factor (%) = $\left[\frac{\text{Current machine average}}{\text{Cumulative machine average}} \right] \cdot 100$ where

$$\text{Cumulative machine average} = \sum \frac{\text{CMA's}^a \text{ for previous 12 months excluding CMA for current month}}{12}$$

Note C: Machine index (%) = $\left[\frac{\text{Current machine average}}{\text{Cumulative F.K.I. average}} \right] \cdot 100$ where

$$\text{Cumulative F.K.I. average} = \sum \frac{\text{CFKIA's}^b \text{ for previous 12 months excluding CFKIA for current month}}{12}$$

Note D: F.K.I. index (%) = $\left[\frac{\text{Current F.K.I. average}}{\text{Cumulative F.K.I. average}} \right] \cdot 100$ where

$$\text{Current F.K.I. average} = \sum \frac{\text{CMA's}^a \text{ for current month for all machines}}{\text{Number of machines}}$$

^aCMA = current machine average for a specific physical property of 26-lb corrugating medium obtained during a given month on a specific machine.

^bCFKIA = current F.K.I. average for a specific physical property of 26-lb corrugating medium obtained during a given month.

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