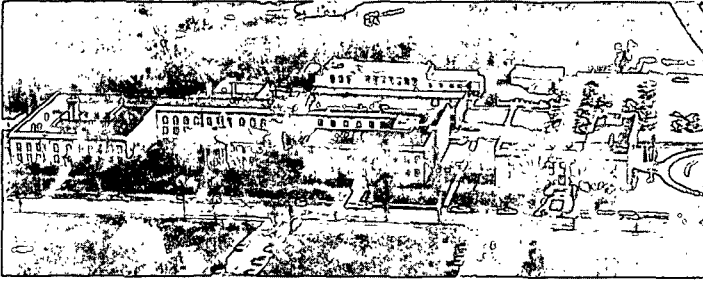


BASE-LINE
JANUARY-FEBRUARY, 1973



THE INSTITUTE OF PAPER CHEMISTRY, APPLETON, WISCONSIN

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR JANUARY AND FEBRUARY, 1973)

Project 2694-2

Report One

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

April 25, 1973

BASE-LINE
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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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TABLE OF CONTENTS

	Page
SUMMARY	1
INTRODUCTION	2
PRESENTATION OF DATA	2
Presentations (Tables):	
Table I-II 26-Lb. Corrugating Medium, Monthly Averages of Mill Data	3-4
Table III Runnability Index, Monthly Averages of Institute Data	5
Table IV Data on Conditioning and Testing Environments	6
APPENDIX. NOTES A, B, AND C USED IN TABULATING OF MILL DATA	8

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR JANUARY AND FEBRUARY, 1973)

SUMMARY OF 26-LB. CORRUGATING MEDIUM DATA
(JANUARY-FEBRUARY, 1973)

Test		January	February
Moisture Content, %	Max. ^a	7.4	7.1
	Min. ^a	3.5	3.9
	Av. ^b	5.9 (30)	5.9 (28)
Basis Weight, lb./M. ft. ²	Max. ^a	26.8	27.1
	Min. ^a	25.6	25.5
	Av. ^b	26.2 (30)	26.1 (28)
Caliper, pt.	Max. ^a	11.6	11.7
	Min. ^a	8.9	9.0
	Av. ^b	10.0 (26)	10.1 (24)
Concora, p.s.i.	Max. ^a	49.4	48.7
	Min. ^a	31.8	31.8
	Av. ^b	39.5 (30)	39.4 (28)
Runnability Index	Max. ^a		100
	Min. ^a		41
	Av. ^b		75 (26)

^aCurrent machine average.

^bCurrent FKI average, number of machines is indicated in parentheses.

INTRODUCTION

The continuous base-line study (modified) is a compilation of monthly average of mill test data obtained routinely on 26-lb. corrugating medium manufactured in the member mills of F.K.B.I., Inc. Mill data are included for moisture content, basis weight, caliper, and concola made on the production of individual machines which produced at least 500 tons of this grade weight during a given month. In addition, the F.K.B.I. has arranged for the runnability tests to be made at The Institute of Paper Chemistry on samples submitted by each participating machine. The program allows for the submission of two samples per machine per month. Runnability index values are included in this report for samples of medium submitted to the Institute during this period.

PRESENTATION OF DATA

For the 26-lb. grade weight of corrugating medium referred to earlier, mill test averages for moisture content, basis weight, caliper, concola, and runnability index results are compiled in the following tables.

Table Number	Description
I-II	Mill Test Averages on 26-lb. Corrugating Medium
III	Institute Test Averages of Runnability Index

Data submitted by the participating mills relative to conditioning and testing environments are summarized in Table IV. The procedures used in calculating cumulative machine averages, machine factors, machine indexes, and FKI indexes are described in the Appendix.

TABLE I
AVERAGES OF ROUTINE MILL QUALITY CONTROL DATA FOR 26 LB. CORRUGATING MEDIUM
JANUARY, 1973

CODE	MOISTURE CONTENT, PERCENT				BASIS WT., LB./ M SQ. FT.				CALIPER, PT.				CONCORA TEST, P.S.I.			
	MACHINE DATA				MACHINE DATA				MACHINE DATA				MACHINE DATA			
	CUR. AV.	CUM. AV.	FACT. *A	IND. *B	CUR. AV.	CUM. AV.	FACT. *A	IND. *B	CUR. AV.	CUM. AV.	FACT. *A	IND. *B	CUR. AV.	CUM. AV.	FACT. *A	IND. *B
A1	6.6				26.5				10.6				40.1			
B1	6.9				26.1				11.6				33.6			
C1	4.8				26.8				9.7				40.8			
D1	4.8				25.7				9.8				37.2			
E1	7.1				26.2				9.8				40.2			
F1	6.0				26.2				10.9				42.0			
G1	6.9				25.6				10.1				44.4			
H1	5.2				26.2				9.0				42.6			
I1	6.3				26.3								40.0			
J1	5.2				25.6				9.2				36.0			
K1	4.1				26.8				9.1				36.7			
L1	6.8				26.1				11.1				31.8			
M1	6.9				26.2				10.5				40.6			
N1	7.4				26.3				9.8				43.0			
O1	6.4				26.0								40.2			
P1	3.8				26.1				9.1				36.5			
Q1	6.4				26.8				9.3				49.4			
R1	6.7				26.0								38.7			
S1	5.2				26.1								42.6			
T1	5.8				25.9				10.8				41.4			
U1	6.5				26.2				9.0				39.0			
V1	4.7				26.0				11.4				38.6			
W1	3.5				26.3				9.6				36.5			
X1	6.3				26.8				10.2				34.2			
Y1	6.3				26.7				9.7				42.6			
Z1	7.1				26.1				10.5				40.6			
A2	5.6				25.9				9.2				38.6			
B2	6.2				26.0				11.0				41.4			
C2	6.3				26.7				9.2				38.5			
D2	5.6				26.0				8.9				38.2			

FKI DATA

CUR.																
AV.	5.9				26.2				10.0				39.5			
CUM.																
AV.																
IND.																
*C																

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

TABLE II
AVERAGES OF ROUTINE MILL QUALITY CONTROL DATA FOR 26 LB. CORRUGATING MEDIUM
FEBRUARY, 1973

CODE	MOISTURE CONTENT, PERCENT				BASIS WT., LB./ M SQ. FT.				CALIPER, PT.				CONCORA TEST, P.S.I.			
	MACHINE DATA				MACHINE DATA				MACHINE DATA				MACHINE DATA			
	CUR. AV.	CUM. AV.	FACT. *A	IND. *B	CUR. AV.	CUM. AV.	FACT. *A	IND. *B	CUR. AV.	CUM. AV.	FACT. *A	IND. *B	CUR. AV.	CUM. AV.	FACT. *A	IND. *B
A1	6.8	6.6	103.0	115.2	26.5	26.5	100.0	101.1	10.6	10.6	100.0	106.0	40.0	40.1	99.8	101.3
B1	6.8	6.9	98.6	115.2	26.2	26.1	100.4	100.0	11.7	11.6	100.9	117.0	34.8	33.6	103.6	88.1
C1	5.2	4.8	108.3	88.1	26.8	26.8	100.0	102.3	9.7	9.7	100.0	97.0	40.8	40.8	100.0	103.3
D1	4.8	4.8	100.0	81.4	25.7	25.7	100.0	98.1	9.7	9.8	99.0	97.0	39.2	37.2	105.4	99.2
E1	6.8	7.1	95.8	115.2	26.0	26.2	99.2	99.2	10.0	9.8	102.0	100.0	40.2	40.2	100.0	101.8
F1	6.0	6.0	100.0	101.7	25.8	26.2	98.5	98.5	11.1	10.9	101.8	111.0	39.0	42.0	92.8	98.7
G1	7.1	6.9	102.9	120.3	25.5	25.6	99.6	97.3	10.1	10.1	100.0	101.0	43.8	44.4	98.6	110.9
H1	5.5	5.2	105.8	93.2	26.5	26.2	101.1	101.1	9.7	9.0	107.8	97.0	42.8	42.6	100.5	108.4
I1	6.3	6.3	100.0	106.8	26.2	26.3	99.6	100.0					39.8	40.0	99.5	100.8
J1	5.2	5.2	100.0	88.1	25.6	25.6	100.0	97.7	9.2	9.2	100.0	92.0	39.2	36.0	108.9	99.2
K1	4.0	4.1	97.6	67.8	26.9	26.8	100.4	102.7	9.1	9.1	100.0	91.0	38.3	36.7	104.4	97.0
L1	6.8	6.8	100.0	115.2	26.1	26.1	100.0	99.6	11.3	11.1	101.8	113.0	31.8	31.8	100.0	80.5
M1 *		6.9				26.2				10.5				40.6		
N1	7.1	7.4	95.9	120.3	26.1	26.3	99.2	99.6	9.8	9.8	100.0	98.0	43.0	43.0	100.0	108.9
O1	6.5	6.4	101.6	110.2	26.2	26.0	100.8	100.0					40.2	40.2	100.0	101.8
P1	3.9	3.8	102.6	66.1	26.1	26.1	100.0	99.6	9.1	9.1	100.0	91.0	36.4	36.5	99.7	92.2
Q1	6.1	6.4	95.3	103.4	25.8	26.8	96.3	98.5	9.2	9.3	98.9	92.0	48.7	49.4	98.6	123.3
R1	6.5	6.7	97.0	110.2	25.9	26.0	99.6	98.8					38.7	38.7	100.0	98.0
S1	5.7	5.2	109.6	96.6	26.0	26.1	99.6	99.2					42.6	42.6	100.0	107.8
T1	6.0	5.8	103.4	101.7	25.8	25.9	99.6	98.5	10.8	10.8	100.0	108.0	37.7	41.4	91.1	95.4
U1	6.8	6.5	104.6	115.2	26.3	26.2	100.4	100.4	10.1	9.0	112.2	101.0	38.4	39.0	98.5	97.2
V1	5.1	4.7	108.5	86.4	26.0	26.0	100.0	99.2	11.5	11.4	100.9	115.0	39.4	38.6	102.1	99.7
W1	4.3	3.5	122.8	72.9	26.3	26.3	100.0	100.4	9.8	9.6	102.1	98.0	36.4	36.5	99.7	92.2
X1	6.4	6.3	101.6	108.5	27.1	26.8	101.1	103.4	10.6	10.2	103.9	106.0	33.6	34.2	98.2	85.1
Y1	6.2	6.3	98.4	105.1	26.7	26.7	100.0	101.9	10.3	9.7	106.2	103.0	42.7	42.6	100.2	108.1
Z1 *		7.1				26.1				10.5				40.6		
A2	5.5	5.6	98.2	93.2	25.8	25.9	99.6	98.5	9.0	9.2	97.8	90.0	38.4	38.6	99.5	97.2
B2	6.4	6.2	103.2	108.5	26.0	26.0	100.0	99.2	11.0	11.0	100.0	110.0	41.4	41.4	100.0	104.8
C2	6.3	6.3	100.0	106.8	26.3	26.7	98.5	100.4	9.1	9.2	98.9	91.0	37.4	38.5	97.1	94.7
D2	5.5	5.6	98.2	93.2	25.8	26.0	99.2	98.5	9.1	8.9	102.2	91.0	38.0	38.2	99.5	96.2
FKI DATA																
CUR.																
AV. 5.9					26.1				10.1				39.4			
CUM.																
AV. 5.9					26.2				10.0				39.5			
IND.																
*C 100.0					99.6				101.0				99.7			

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

*- NO QUALITY DATA SUBMITTED.

TABLE III
RUNNABILITY TESTER RESULTS

CODE	SAMPLE ONE		SAMPLE TWO		SAMPLE THREE		SAMPLE FOUR		AVERAGE RUNNABILITY INDEX
	DATE MADE	RUNNA- BILITY INDEX	DATE MADE	RUNNA- BILITY INDEX	DATE MADE	RUNNA- BILITY INDEX	DATE MADE	RUNNA- BILITY INDEX	
A1	1-17-73	73	1-24-73	66	2- 8-73	72	2-15-73	75	72
B1	2-13-73	50	2-22-73	51		*		*	51
C1	1-10-73	98	2-28-73	98		*		*	98
D1	2- 7-73	69		*		*		*	69
E1	1-11-73	64	1-21-73	65	2-12-73	63	2-22-73	62	64
F1	2-20-73	84	2-26-73	91		*		*	88
G1	1-30-73	70	1-31-73	81	2-23-73	80	2-26-73	77	77
H1	1-23-73	97	1-31-73	100		*		*	99
I1		*		*		*		*	*
J1	2- 7-73	66		*		*		*	66
K1		*		*		*		*	*
L1	2-13-73	45	2-22-73	37		*		*	41
M1	1- 7-73	45	1-14-73	50		*		*	48
N1	2-10-73	42	2-24-73	50		*		*	46
O1	1-10-73	79	1-26-73	78	2- 7-73	85	2-22-73	89	83
P1	1-31-73	83	2- -73	79		*		*	81
Q1	1-10-73	100	1-20-73	100		*		*	100
R1		*		*		*		*	*
S1	1-22-73	76		80	2-14-73	76	2-21-73	76	77
T1	1-26-73	85	1-29-73	94	2- 8-73	92	2-20-73	87	90
U1	1-30-73	100		*		*		*	100
V1	1-26-73	71		63		79		84	74
W1	1-31-73	90	2- -73	86		*		*	88
X1	2-12-73	41	2-22-73	54		*		*	48
Y1	1-16-73	70	1-26-73	63	2-19-73	60		*	64
Z1	1-11-73	49	1-16-73	46		*		*	48
A2	1-18-73	74	2- 8-73	80	2-28-73	87		*	80
B2	1-11-73	100	1-24-73	100	2-12-73	100	2-21-73	98	100
C2		*		*		*		*	*
D2	12-18-72	95	1-22-73	98	1-23-73	100	2- 7-73	97	98
									MINIMUM 41
									MAXIMUM 100
									FKI AVERAGE 75 (26)

*- NO SAMPLE SUBMITTED.

NOTE- NUMBER IN PARENTHESES IS NUMBER OF MACHINES INCLUDED IN AVERAGE.

TABLE IV
DATA ON CONDITIONING AND TESTING ENVIRONMENTS
JANUARY AND FEBRUARY, 1973

Code	Conditioning Environment				Testing Environment
	Are Quality Samples Conditioned Before Testing?	Time	R.H., %	Temp., °F.	Are Quality Samples Tested Under Controlled Conditions of Temperature & Humidity?
A1	No	--	--	--	No
B1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
C1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; Ambient
D1	No	--	--	--	No
E1	No	--	--	--	Yes: $72 \pm 2^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
F1	No	--	--	--	No
G1	No	--	--	--	No
H1	No	--	--	--	Yes: $73 \pm 3^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
I1	No	--	--	--	No
J1	No	--	--	--	No
K1	No	--	--	--	Yes: $73 \pm 3^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
L1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
M1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; $50 \pm 4\%$ R.H.
N1	No	--	--	--	Yes: $72 \pm 2^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
O1	No	--	--	--	Yes: $72 \pm 2^{\circ}\text{F.}$; $50 \pm 5\%$ R.H.
P1	No	--	--	--	No
Q1	No	--	--	--	No
R1	No	--	--	--	No
S1	No	--	--	--	No
T1	No	--	--	--	No
U1	No	--	--	--	Yes: $77 \pm 5^{\circ}\text{F.}$; $55 \pm 6\%$ R.H.
V1	No	--	--	--	Yes: $73 \pm 1^{\circ}\text{F.}$; $50 \pm 1\%$ R.H.
W1	No	--	--	--	No
X1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
Y1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
Z1	No	--	--	--	Yes: $73 \pm 2^{\circ}\text{F.}$; $50 \pm 4\%$ R.H.
A2	No	--	--	--	No
B2	No	--	--	--	Yes: $74 \pm 1^{\circ}\text{F.}$; $50 \pm 1\%$ R.H.
C2	No	--	--	--	Yes: $73 \pm 3^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.
D2	No	--	--	--	Yes: $73 \pm 3.5^{\circ}\text{F.}$; $50 \pm 2\%$ R.H.

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.

THE INSTITUTE OF PAPER CHEMISTRY

R. C. McKee / gjs

R. C. McKee, Chairman
Container Section

APPENDIX

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

Notes A, B, and C, used in the tables of mill data are given below; these notes define the procedure used in calculating machine factor, machine index, and FKI index.

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

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

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

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

$$\text{Note C: FKI index (\%)} = \left[\frac{\text{Current FKI average}}{\text{Cumulative FKI average}} \right] \cdot 100 \text{ where}$$

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

^aCMA = current machine average for a specific physical property of a specific linerboard grade weight obtained during a given month on a specific machine.

^bCFKIA = current FKI average for a specific physical property of a specific linerboard grade weight obtained during a given month.

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