Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #557 (B) - February 2016

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample Lot	Analysis Name
201	BX10	Box Compression Strength, Corrugated Boxes
202	ECT9	Edgewise Compressive Strength, Wax (T811), Corrugated board
203	ECT9	Edgewise Compressive Strength by Clamp (T839), Corrugated board
205	42D1	Mullen Burst of Linerboard, 42 lb Linerboard
207	36Z3	Mullen Burst of Linerboard, 36 lb Linerboard
215	42D1	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
217	36Z3	Ring Crush of Linerboard, Rigid Platen Type, 36 lb Linerboard
223	42D1	STFI of Linerboard, 42 lb Linerboard
225	36Z3	STFI of Linerboard, 36 lb Linerboard
228	69C	Roughness - Stylus Method, 69 lb Linerboard
229	42D2	Roughness - Sheffield Method, 42 lb Linerboard
231	36Z	Internal Bond Strength, Linerboard, 36 lb Linerboard
234	36Z	Coefficient of Static Friction - Inclined Plane, 36 lb Linerboard
237	36Z	Air Resistance - Gurley Method, Linerboard, 36 lb Linerboard
240	CM81	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM81	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM81	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM81	STFI of Medium, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

The Interlaboratory Testing Program for Containerboard is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance provided by the Containerboard Group of the American Forest & Paper Association. The tests are conducted on a monthly basis.

For these tests samples of linerboard and corrugating medium, that each have been separately randomized from narrow rolls, are distributed for testing weekly. One weight of medium (26 lb.) is used for Concora Flat Crush Strength, Corrugated Fluted Crush Strength, Ring Crush Strength, and STFI Compression. Two weights of linerboard are tested each month for Mullen Burst, Ring Crush, and STFI Compression: 42 lb. - every month; 36 lb. and 69 lb. - alternate months. The participants return their test results for analysis and receive a monthly report.

Please refer to the section, "EXPLANATION OF TABLES", for definitions of terms and guidelines to interpreting the results.

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

The samples of linerboard and corrugating medium, which have been randomized and placed in sealed packages for distribution in this program, may be used as collaborative reference materials. The values most representative of each material are the Cumulative Grand Means in the latest reports, given at the bottom right of each table. Comparisons can only be made within one lot of material; therefore check your measurements against the Cumulative Grand Means with the same lot code as on the packages being tested.

Material	Lot Code	Dates in Use
36# Linerboard	36Z2	December 2012 - November 2014
	36Z3	December 2014 - Current
42# Linerboard	42B4	June 2014 - April 2015
	42D1	May 2015 - Current
69# Linerboard	69A2	February 2013 - November 2013
	69C,C1	December 2013 - Current
26# Corrugating Medium	CM73	Janruary 2013 - September 2015
	CM81	October 2015 - Current

ABOUT CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 80 countries, currently participate in the CTS programs.

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EXPLANATION OF TABLES

Each analysis is divided into three time spans. On the left side of the table are the individual laboratory results for each week of the month; in the center are each lab's statistical data for the month; and on the right are each lab's cumulative data for up to 16 weeks. At the bottom of the table are the consensus statistics for all the participants for each of the three time spans.

Definitions of Terms Used

Weekly Results

Laboratory Data

WebCode - A six character laboratory identifier used to maintain information on a confidential basis. The WebCode is unique for each cycle and will change for each report. Your WebCode can be found in your Individual Report (Current Month Performance Report) and your datasheet.

Weekly Means - The average of the test results obtained by the participant for each week that data were reported.

Consensus Data

Wk Mean - For each week, the average of the Means for all the participants, excluding those laboratories flagged with an 'X'.

Avg SDr - For each week, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'. The Avg SDr is an indication of the variation of measurements within an average laboratory.

SD btwn Labs - For each week, the standard deviation of the laboratory Means about the Wk Mean, excluding those laboratories flagged with an 'X'. The SD LABS is an indication of the precision of measurement between the laboratories.

Labs Incld - The number of laboratory Means included in the Wk Mean for that week.

Labs Excld - The number of laboratory Means reported but excluded from the Wk Mean for that week because of outlying results ('X' following Mean).

Labs not rcvd - The number of laboratories failing to report for that week.

Monthly Results

Laboratory Data

Mean - For each laboratory, the average of all the weekly Means reported for this month.

CPV - Comparative Performance Value, an indication of how well a laboratory's Mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean). The closer a laboratory's CPV is to zero, the more consistent its results are with the other participants' data.

SDr - For each laboratory, the average of the weekly within-lab standard deviations (SDr's) for all reported Weekly Means this month.

SD Wk - The standard deviation among the laboratory's weekly Means, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.

Consensus Data

Month Mean - The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for this month.

Avg SDr - For the current month, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'.

SD btwn Labs - For the current month, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.

SD btwn Group - For the current month, the standard deviation of the laboratory Means within the group about the Month Mean, excluding those laboratories flagged with an 'X'.

SD btwn Wks - For the current month, the average of the laboratory between week standard deviations (SD Wks') for all

Cumulative Results

Laboratory Data

Mean	- For each lab, the average of all the monthly Means reported for the weeks shown.
CPV	- Comparative Performance Value, an indication of how well a laboratory's cumulative mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean).
SDr	- For each laboratory, the average of the weekly within-lab standard deviations (SDr's) for the weeks shown.
SD Wk	- The standard deviation among the laboratory's weekly Means for the weeks shown, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.
Wks	- The number of weeks included in the cumulative period.
Inst	- The two letter instrument code. Codes are summarized at the bottom of the last analysis page.

Consensus Data

Grand Mean	- The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for the number of weeks included in the cumulative period.
Avg SDr	- For the cumulative period, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'.
SD btwn Labs	- For the cumulative period, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
SD btwn Wks	- For the cumulative period, the average of the laboratory between week standard deviations for all the participants.

Any laboratory that receives a 'flag' following a mean or standard deviation should refer to the chart below for an explanation of the data flag symbol:

Flag	Explanation

Data Flags " X " and " * " indicate a laboratory's performance on an average value differed from the consensus.
Data Flags " H " and " L " indicate a laboratory's performance on a standard deviation differed from the consensus.

Flags assigned to Weekly Means, Monthly Mean and Cumulative Mean:

X	Excluded from the weekly means, monthly means and/or the cumulative mean. Immediate review of data and/or testing procedure is recommended.
*	Included in the weekly means, monthly means and/or the cumulative mean; however, lab should review testing procedure and monitor future results.

Flags assigned to Weekly Means:

H	Indicates high within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory average SDr and consensus average SDr values are shown.
L	Indicates low within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory monthly average SDr and consensus average SDr values are shown.

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

H	Indicates high variabilty between weekly means (high week-to-week variation).
L	Indicates low variabilty between weekly means (low week-to-week variation).

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Containerboard Interlaboratory Testing Program

Analysis 201

Top to Bottom Box Compression Strength, Corrugated Boxes - BX10

TAPPI Official Test Method T804

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
29HW8G	767.3	0.52	25.3	720.7	-0.15	32.1	2	LH
4V4VAE	695.0	-0.53	77.9	701.5	-0.43	66.0	2	ES
9FTQ2B	864.6	1.93	15.5	864.6	1.90	15.5	1	EX
ABWLLC	782.4	0.74	35.1	716.6	-0.21	38.8	2	ER
C2GL67	787.5	0.81	29.8	787.5	0.80	29.8	1	TE
C2ZAKF	778.8	0.69	17.3	778.8	0.67	17.3	1	XX
CF2287	749.0	0.26	32.3	810.6	1.13	39.2	2	LG
DLJUWA	804.0	1.05	24.3	780.5	0.70	40.3	2	LH
FYK4G3	710.0	-0.31	60.9	695.1	-0.52	60.9	2	EX
G4VHYZ	780.8	0.72	17.0	880.9	2.13 *	51.7	2	TB
HNTC39	786.2	0.79	89.7	789.0	0.82	67.3	2	ET
KBJM4X	675.1	-0.82	33.9	682.8	-0.69	41.1	2	ER
KHG26Y	811.4	1.16	50.9	760.0	0.41	51.5	2	LL
MCL863	648.6	-1.20	42.4	689.1	-0.60	33.3	2	LG
MHVA8X	659.6	-1.04	35.6	655.4	-1.08	33.6	2	LS
NRCDR3	798.2	0.97	17.5	787.6	0.80	17.4	2	ER
PCXHXR	646.6	-1.23	60.7	648.7	-1.18	53.1	2	LL
QBGL6T	621.2	-1.60	36.7	648.6	-1.18	30.5	2	ER
QWVKXZ	643.3	-1.28	43.7	643.9	-1.25	33.6	2	LS
UBKNXT	735.3	0.06	47.9	759.8	0.40	46.4	2	LM
XLGPAN	675.5	-0.81	72.3	673.2	-0.83	58.3	2	LM
XMC6MK	643.0	-1.28	24.1	639.4	-1.31	23.1	2	LG
ZRQY6L	759.0	0.40	97.1	710.1	-0.30	71.3	2	ES

Consensus (All Labs) Results

Month Mean	731.41	Grand Mean	731.49
Avg SDr	48.74	Avg SDr	44.40
SD btwn Labs	68.98	SD btwn Labs	70.19
Labs Incld	23	Labs Incld	23

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	706.16	68.06	25.25	5
Clip sealing	723.92	64.81	7.49	15
Tape sealing	810.96	46.57	79.55	3

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Containerboard Interlaboratory Testing Program

Analysis 201

Top to Bottom Box Compression Strength, Corrugated Boxes - BX10

TAPPI Official Test Method T804

Instrument Code List as Reported by the Labs

(ER) - Emerson 6200 Series

(ES) - Emerson 8510

(ET) - Emerson 7200

(EX) - Emerson Apparatus (Model not specified)

(LG) - TLS / L.A.B. Validator Series

(LH) - L.A.B. Compression Tester Model #10610

(LL) - Lansmont 76-5K

(LM) - Lansmont 122-15k

(LS) - Lansmont Squeezer

(TB) - TMI Monitor/Compression Tester, Model 17-70

(TE) - Testometric M500 - 25 KN

(XX) - Instrument make/model not specified by lab

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Containerboard Interlaboratory Testing Program

Analysis 202

Edgewise Compressive Strength, by T811, Corrugated board - ECT9

TAPPI T811

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
7E9Z2F	38.7	-0.85	0.6	38.7	-0.85	0.6	1	WK
DLJUWA	41.8	-0.12	1.1	41.8	-0.12	1.1	1	TC
MCL863	46.0	0.89	1.6	46.0	0.89	1.6	1	LE
MHVA8X	43.2	0.23	1.8	43.2	0.23	1.8	1	LC
QWVKXZ	35.9	-1.52	2.6	35.9	-1.52	2.6	1	EM
RF7UHX	45.1	0.66	1.1	45.1	0.66	1.1	1	TB
U6W24M	39.2	-0.74	1.3	39.2	-0.74	1.3	1	LC
WNJGDU	48.4	1.45	0.7	48.4	1.45	0.7	1	EM

Consensus (All Labs) Results

Month Mean	42.29	Grand Mean	42.29
Avg SDr	1.48	Avg SDr	1.48
SD btwn Labs	4.23	SD btwn Labs	4.23
Labs Incld	8	Labs Incld	8

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200 Series

(LE) - L&W Crush Tester 840

(TC) - TMI Monitor/Compression Tester, Model 17-37

(LC) - L&W Crush Tester 48

(TB) - TMI Monitor/Compression Tester, Model 17-70

(WK) - Zwick Z005 Crush Tester

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Containerboard Interlaboratory Testing Program

Analysis 203

Edgewise Compressive Strength by T839, Corrugated board - ECT9

TAPPI T839

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
29HW8G	48.6	0.89	1.7	48.6	0.89	1.7	1	EM
4HU6LK	50.0	1.53	0.9	50.0	1.53	0.9	1	LC
4V4VAE	46.8	0.09	1.5	46.8	0.09	1.5	1	LD
86DJPG	44.8	-0.81	2.7	44.8	-0.81	2.7	1	LC
8TJZBC	44.5	-0.94	1.1	44.5	-0.94	1.1	1	TB
9BW7TL	44.5	-0.94	0.5	44.5	-0.94	0.5	1	LC
9FTQ2B	45.5	-0.48	2.7	45.5	-0.48	2.7	1	CT
ABWLLC	44.9	-0.75	1.9	44.9	-0.75	1.9	1	TB
CF2287	46.2	-0.17	1.8	46.2	-0.17	1.8	1	EM
DLJUWA	45.7	-0.38	1.0	45.7	-0.38	1.0	1	TC
FYK4G3	45.9	-0.33	0.7	45.9	-0.33	0.7	1	TL
G4VHYZ	48.4	0.80	0.6	48.4	0.80	0.6	1	LC
GNLNE4	45.7	-0.42	1.5	45.7	-0.42	1.5	1	LD
GPVQ23	45.1	-0.69	1.8	45.1	-0.69	1.8	1	LC
HNTC39	48.7	0.94	2.2	48.7	0.94	2.2	1	TD
KBJM4X	45.8	-0.35	1.5	45.8	-0.35	1.5	1	EN
KHG26Y	52.4	2.62 *	1.8	52.4	2.62 *	1.8	1	BU
MCL863	43.5	-1.41	2.1	43.5	-1.41	2.1	1	LE
MHVA8X	46.5	-0.05	1.7	46.5	-0.05	1.7	1	LC
NRCDR3	43.6	-1.37	1.0	43.6	-1.37	1.0	1	EM
PCXHXR	50.0	1.53	1.4	50.0	1.53	1.4	1	LC
QBGL6T	46.9	0.14	2.1	46.9	0.14	2.1	1	LD
QWVKXZ	46.1	-0.22	1.7	46.1	-0.22	1.7	1	EM
RF7UHX	46.5	-0.06	0.8	46.5	-0.06	0.8	1	TG
TKG6AR	42.8	-1.69	3.0	42.8	-1.69	3.0	1	LD
U6W24M	49.5	1.30	1.6	49.5	1.30	1.6	1	LC
UBKNXT	50.6	1.80	1.3	50.6	1.80	1.3	1	TG
VFE6NR	28.4	-8.18 X	1.7	28.4	-8.18 X	1.7	1	TD
W6T2GT	47.2	0.27	2.4	47.2	0.27	2.4	1	TK
W7433R	45.6	-0.44	1.4	45.6	-0.44	1.4	1	TG
WNJGDU	48.4	0.84	0.7	48.4	0.84	0.7	1	EM
XLGPAN	47.9	0.60	1.9	47.9	0.60	1.9	1	EM
Y494WR	47.0	0.20	1.2	47.0	0.20	1.2	1	LD
YC42QL	43.1	-1.59	1.5	43.1	-1.59	1.5	1	EX
YHBRTR	32.1	-6.53 X	1.7	32.1	-6.53 X	1.7	1	LC
ZRQY6L	45.5	-0.49	1.2	45.5	-0.49	1.2	1	LD

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Containerboard Interlaboratory Testing Program

Analysis 203

Edgewise Compressive Strength by T839, Corrugated board - ECT9

TAPPI T839

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
ZWLT3M	46.7	0.07	1.4	46.7	0.07	1.4	1	LC

Consensus (All Labs) Results

Month Mean	46.59	Grand Mean	46.59
Avg SDr	1.65	Avg SDr	1.65
SD btwn Labs	2.22	SD btwn Labs	2.22
Labs Incld	35	Labs Incld	35

Instrument Code List as Reported by the Labs

(BU) - Buchel Digital Crush Tester

(CT) - Con-Ten

(EM) - Emerson 1200 Series

(EN) - Emerson 2200

(EX) - Emerson (model not specified)

(LC) - L&W Crush Tester 48

(LD) - L&W Crush Tester 248

(LE) - L&W Crush Tester 840

(TB) - TMI Monitor/Compression Tester, Model 17-70

(TC) - TMI Monitor/Compression Tester, Model 17-37

(TD) - TMI Digital Crush Tester, Model 17-09

(TG) - TMI Digital Crush Tester, 17-76

(TK) - TLS Compression Tester, Model 5184

(TL) - Tech-Lab Systems Compression

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Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D1

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2UJ8YN	111.3	108.2	115.9	111.5	111.7	0.63	8.1	3.2	113.3	1.12	9.6	2.9	16	LC
3JVHTM	110.2	109.3	110.2	109.0	109.7	0.06	9.6	0.6 L	107.1	-0.84	11.1	2.1	16	LC
43GWKG	104.1	105.4	102.0	112.0	105.9	-0.99	13.1	4.3	105.9	-1.21	11.3	3.5	12	XX
4V4VAE	107.9	111.8	110.8	114.8	111.3	0.52	10.6	2.8	108.9	-0.25	12.1	3.1	16	LA
78LAFK	104.6	107.5	109.5	106.7	107.1	-0.65	12.7	2.0	109.7	-0.02	11.6	2.9	16	LA
7J4UYG	115.2	102.8 L	102.7	111.3	108.0	-0.40	10.7	6.3	108.0	-0.54	11.5	5.8	12	LA
7TPX8G	109.7	109.8	109.6	109.7 L	109.7	0.07	6.8	0.1 L	109.5	-0.08	7.0	0.2 L	16	LJ
9A62PE	110.9	101.5	105.9	108.1	106.6	-0.79	13.4	4.0	108.3	-0.45	11.8	3.1	14	TB
9BJMYF	107.6	107.0	104.6	107.5	106.7	-0.76	9.6	1.4	108.7	-0.32	9.8	2.4	16	LB
9FTQ2B	114.8	111.6	115.0 H	112.4	113.5	1.10	14.1	1.7	113.4	1.15	13.6	3.5	16	XX
A2UY4D	116.9	120.3 *	114.1	114.3	116.4	1.92	11.4	2.9	118.1	2.61 *	11.4	4.8	16	LA
ABWLLC	102.6	105.9	106.3	109.1	106.0	-0.96	12.2	2.6	107.7	-0.65	11.3	2.8	16	LA
AEJYVF	105.9	110.5	102.1	107.5	106.5	-0.81	9.6	3.5	108.9	-0.27	11.4	3.3	16	LA
B7FKXJ	108.8	105.8 L	107.6 L	105.2	106.9	-0.71	5.3	1.7	106.6	-0.99	5.8	3.3	16	RE
CFWJA8	109.1	105.8	109.8	111.8	109.1	-0.09	10.5	2.5	111.9	0.67	10.7	3.1	16	TP
CH7M74	109.1	110.5	104.4	104.7	107.2	-0.62	9.5	3.1	107.8	-0.60	11.9	3.4	16	LC
D2BQX6	109.9	110.5	112.2	111.0	110.9	0.40	8.0	1.0	109.1	-0.21	7.9	1.8	16	AH
D77KV7	118.6 *H	113.9	114.1	113.2	115.0	1.52	13.9	2.5	112.4	0.82	10.8	3.9	16	LC
DLJUWA	114.0	113.3	117.3	112.5	114.3	1.32	12.9	2.1	114.2	1.40	12.3	3.4	16	AA
DRCP6A	105.4	104.9	105.8	106.5	105.7	-1.04	10.6	0.7	108.3	-0.44	13.1	3.1	8	AX
EUTHA9	123.8 X	115.4 L	119.2 L	114.7 L	118.3	2.43 *	4.6	4.2	118.3	2.68 *	4.6	4.2	4	LA
F2QKX7	102.9	103.2	106.5	106.6	104.8	-1.28	8.9	2.0	105.1	-1.45	7.9	3.4	16	TB
FDK2M8	105.0	108.4	104.8	104.0	105.5	-1.07	9.6	1.9	105.2	-1.42	8.8	1.9	16	LA
GPVQ23	113.7	112.4	109.0	112.6	111.9	0.69	11.1	2.1	110.6	0.28	10.7	3.4	16	LC
GX7TM4	109.1	108.9	109.2	113.3	110.1	0.19	12.1	2.1	111.3	0.47	11.9	2.3	16	TB
JCB8B3	106.0	110.5	107.8	112.6	109.2	-0.06	12.7	2.9	110.1	0.12	11.2	3.1	16	LJ
JD8NMZ	97.3 *	119.1 *	100.0	105.9	105.6	-1.07	9.2	9.7 H	105.9	-1.22	9.5	6.9 H	16	LC
K6B8B2	112.1	114.1	116.1 L	111.2	113.4	1.08	5.4	2.2	111.7	0.61	4.9	2.1	16	XX
MCL863	113.7	109.7	115.0	116.4	113.7	1.17	8.8	2.9	113.8	1.27	11.1	2.1	13	LZ
MHE4TU	106.1 H	103.9	104.4	106.1	105.1	-1.19	12.8	1.1	105.7	-1.25	11.4	2.1	12	LA
MHVA8X	103.6	110.7	103.2	105.1	105.7	-1.04	9.5	3.5	106.2	-1.11	9.9	3.3	16	AH
MN3QNY	105.9	109.6	115.3	104.0	108.7	-0.20	13.3	5.0	111.5	0.54	12.5	4.8	16	LA
NJ2B72	109.3	112.2	113.1 H	112.8	111.8	0.66	13.3	1.7	110.4	0.20	12.2	3.1	16	LZ
NKD2GR	99.8	114.2	109.9	106.6	107.6	-0.50	13.1	6.1	110.1	0.12	11.4	3.6	16	LA
Q2WGXT	106.6 L	107.3 L	109.2 L	108.4 L	107.9	-0.43	4.0	1.2	107.8	-0.60	7.1	1.1	16	LA

Report #557

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D1

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QBGL6T	117.4	113.2	108.7	110.4	112.4	0.82	14.0	3.8	113.7	1.23	11.3	4.8	16	AH
QN2AUW	112.0	108.9	107.7	109.0	109.4	-0.01	8.5	1.8	111.7	0.62	9.2	2.7	16	LC
QW2MZR	105.9	105.6	116.2	109.0	109.2	-0.07	9.1	4.9	109.6	-0.06	10.2	4.0	16	LC
QWVKXZ	113.2	107.9	113.5	112.8	111.8	0.66	10.6	2.6	111.6	0.59	11.1	8.6 H	16	LA
RN68NT	106.1	91.2 X	110.6	107.6	103.9	-1.54	10.8	8.7 H	105.3	-1.41	11.1	5.0	16	LC
T3F8XN	110.6	110.2	114.0	108.0	110.7	0.35	11.0	2.5	108.9	-0.26	10.8	7.0 H	16	AH
TAJ27X	109.4 L	109.1 L	110.6 L	114.1 L	110.8	0.38	4.0	2.3	109.8	0.00	4.8	2.1	16	LA
TKG6AR	107.6	111.4	108.1	108.6	108.9	-0.14	7.8	1.7	111.3	0.50	8.9	3.2	16	AA
TXLDZM	116.0	114.3	113.9	112.6	114.2	1.31	12.9	1.4	114.3	1.43	11.7	2.1	16	LA
VVRDNV	107.6	112.2	113.9	112.1	111.4	0.55	12.4	2.7	111.1	0.42	11.4	2.5	16	LC
X4CGVL	106.8	108.2	109.2	113.2	109.4	-0.02	10.5	2.7	108.6	-0.36	11.1	3.4	16	LC
XLGPAN	107.2	102.0	106.4	102.4	104.5	-1.36	8.9	2.7	106.6	-0.99	11.1	2.8	16	AH
XMC6MK	106.3	105.6	106.3	107.2	106.4	-0.85	10.3	0.7	105.1	-1.46	10.7	2.7	12	AH
Y8NQDH	105.2	102.2	104.3	100.5 *	103.1	-1.76	7.2	2.1	105.5	-1.33	7.9	3.2	16	AX
YDGNBL	108.3	104.3	106.5	102.7	105.5	-1.10	10.3	2.5	105.8	-1.23	9.9	3.0	16	AH
YHBRTR	105.4 L	112.1	115.0	107.7	110.0	0.17	9.4	4.3	109.3	-0.14	11.0	3.2	16	LA
YPX9UH	108.1	114.1	118.4	117.5 *	114.5	1.40	10.0	4.7	112.3	0.81	10.6	4.1	12	LC
ZRQY6L	120.0 *	122.0 X	121.0 *	110.0	118.3	2.43 *	7.4	5.6	115.3	1.74	8.3	8.2 H	5	AH
ZVF2JM	111.9	107.3	100.4	113.7	108.3	-0.31	11.1	5.9	109.0	-0.24	12.2	4.7	15	LZ

Consensus (All Labs) Results

Wk Mean	108.92	109.31	109.76	109.59	Month Mean	109.44	Grand Mean	109.75
Avg SDr	10.63	10.62	10.65	10.06	Avg SDr	10.45	Avg SDr	10.47
SD btwn Labs	4.61	4.15	5.03	3.77	SD btwn Labs	3.63	SD btwn Labs	3.19
Labs Incld	53	52	54	54	SD btwn Wks	3.51	SD btwn Wks	3.80
Labs Excld	1	2	0	0	Labs Incld	54	Labs Incld	54
Labs not rcvd	0	0	0	0				

Instrument Code List as Reported by the Labs

(AA) - Perkins Model A

(AH) - Perkins Model AH

(AX) - Perkins Mullen Tester (model not specified)

(LA) - L & W Bursting Strength Tester

(LB) - L & W Burst-O-Matic

(LC) - L & W Autoline

(LJ) - L & W Bursting Strength Tester J-Type

(LZ) - L & W (model not specified)

(RE) - Regmed/Mullen Tester

(TB) - TMI Monitor/Burst 1000

(TP) - Technidyne PROFILE/Plus

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 207

Bursting Strength (Mullen), 36 lb Linerboard - 36Z3

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2UJ8YN	81.1	83.1	82.2	84.3	82.7	1.15	4.9	1.4	82.9	1.44	5.0	1.6	8	LC
3JVHTM	78.9	79.1	76.6	78.0	78.2	-0.41	5.5	1.1	76.9	-0.75	5.3	1.9	12	LC
43GWKG	77.5	74.7	75.2	73.6	75.3	-1.41	5.3	1.6	74.2	-1.76	5.4	3.1	12	XX
4V4VAE	76.3	78.0	77.6	79.2	77.8	-0.54	5.5	1.2	78.1	-0.32	5.4	1.5	12	LA
78LAFK	78.0	79.2	77.3	82.0	79.1	-0.08	6.2	2.1	78.9	-0.02	5.8	1.6	12	LA
7J4UYG	80.2	89.9 X	75.1	74.1	79.8	0.16	3.7	7.2 H	77.6	-0.52	5.2	5.2 H	12	LA
7TPX8G	78.6	78.5	78.7	78.7 L	78.6	-0.25	3.7	0.1 L	78.6	-0.15	3.9	0.1 L	12	LJ
9A62PE	75.0	78.9	76.1	77.3	76.8	-0.87	6.0	1.7	76.2	-1.02	5.8	1.5	12	TB
9BJMYF	80.4	75.5	76.5	76.6	77.3	-0.72	3.8	2.2	77.5	-0.52	3.8	1.6	12	LB
9FTQ2B	81.8	88.7 *	87.4 *	87.0 *	86.2	2.37 *	5.1	3.0	81.0	0.73	5.3	7.6 H	12	XX
A2UY4D	84.2	87.6 *	85.4	83.1	85.1	1.98	6.0	1.9	83.7	1.73	4.7	2.6	12	LA
ABWLLC	74.1	75.5	73.8	73.4	74.2	-1.77	5.4	0.9	74.8	-1.54	6.1	2.0	12	LA
AEJYVF	77.3	78.8	80.0	79.9	79.0	-0.12	5.3	1.3	78.4	-0.21	5.6	1.3	12	LA
B7FKXJ	83.2	84.8	87.0 *	86.4 *	85.4	2.07 *	4.1	1.7	82.4	1.26	4.1	3.3	12	RE
CFWJA8	75.5	75.7	76.4	79.6	76.8	-0.88	3.4	1.9	76.7	-0.83	3.8	1.5	12	TP
CH7M74	76.5	78.2	79.5	75.0	77.3	-0.70	5.9	2.0	76.9	-0.77	5.3	1.8	12	LC
D2BQX6	79.5	79.3	80.6	80.9	80.1	0.25	4.2	0.8	80.0	0.37	4.2	0.7	12	AH
D77KV7	81.3	79.1	81.5	82.4	81.1	0.59	6.1	1.4	79.1	0.06	5.1	2.1	12	LC
DLJUWA	82.3	81.5	80.3	82.0	81.5	0.74	4.3	0.9	83.0	1.48	4.8	1.9	12	AA
DRCP6A	75.0	74.2	77.0	77.6	75.9	-1.17	4.6	1.6	75.7	-1.19	4.8	1.2	8	AX
EUTHA9	82.4	88.3 *	79.8	83.8	83.6	1.45	4.8	3.6	83.3	1.60	4.5	2.9	8	LA
F2QKX7	78.2	79.3	83.9	81.8	80.8	0.50	6.4	2.6	81.3	0.87	5.5	4.9 H	12	TB
FDK2M8	73.9	78.1	77.3	76.5	76.4	-1.00	4.3	1.8	76.2	-1.01	4.1	1.4	12	LA
GPVQ23	75.2	74.5	78.0	80.1	77.0	-0.82	5.6	2.6	77.8	-0.43	5.7	2.2	10	LC
GX7TM4	80.7	79.1	81.1	81.2	80.5	0.41	5.0	1.0	80.0	0.38	5.3	2.3	12	TB
JCB8B3	79.9	78.3	79.3	75.4	78.2	-0.39	5.0	2.0	76.9	-0.76	4.7	1.6	12	LJ
JD8NMZ	78.3	77.1	82.0	77.7	78.8	-0.19	4.6	2.2	76.2	-1.03	5.0	3.5	12	LC
K6B8B2	82.1	82.6	84.3	81.4	82.6	1.12	4.4	1.2	82.7	1.37	4.3	1.2	12	XX
MCL863	82.2	82.0	82.2	82.8	82.3	1.02	3.7	0.4 L	83.0	1.46	5.0	1.2	9	LZ
MHE4TU	76.8	80.5	78.3	75.8	77.8	-0.52	5.1	2.1	77.1	-0.70	5.1	1.7	8	LA
MHVA8X	73.6	74.0	78.1	79.5	76.3	-1.05	5.5	2.9	74.9	-1.50	4.9	2.4	12	AH
MN3QNY	81.2	79.4	79.1	78.9	79.7	0.10	5.2	1.1	80.5	0.54	6.0	1.4	12	LA
NJ2B72	77.3	80.3	76.2	80.6	78.6	-0.26	6.6	2.2	79.1	0.04	5.9	1.7	12	LZ
NKD2GR	79.0	78.0	78.9	80.1	79.0	-0.12	4.5	0.9	78.4	-0.20	5.2	1.1	12	LA
Q2WGXT	81.4	81.6	80.7 L	79.7	80.9	0.52	2.4	0.9	79.4	0.16	2.6	1.7	12	LA

Report #557

Containerboard Interlaboratory Testing Program

Analysis 207

Bursting Strength (Mullen), 36 lb Linerboard - 36Z3

TAPPI Official Test Method T807

WebCode	Weekly Means Week 1	Week 2	Week 3	Week 4	Monthly Results Mean	CPV	SDr	SD Wks	Cumulative Results Mean	CPV	SDr	SD Wks	Wks	Inst
QBGL6T	79.2	81.0	80.2	84.7	81.3	0.66	5.5	2.4	80.5	0.54	5.0	3.1	12	AH
QN2AUW	85.6 *	83.6	87.8 *	84.9	85.5	2.11 *	4.5	1.8	85.2	2.28 *	4.2	1.3	12	LC
QW2MZR	75.5	78.0	80.8	75.2	77.4	-0.68	5.5	2.6	78.6	-0.14	5.5	3.8	11	LC
QWVKXZ	76.0	77.6	74.5	79.1	76.8	-0.87	6.1	2.0	76.1	-1.04	5.3	3.1	12	LA
RN68NT	74.3	72.1 *L	80.7	79.9	76.7	-0.90	4.5	4.2	76.2	-1.01	4.8	2.8	12	LC
T3F8XN	80.8	76.6	82.0	80.6	80.0	0.22	5.0	2.3	78.0	-0.36	5.1	2.5	12	AH
TAJ27X	79.6 L	79.5	80.4	79.8	79.8	0.16	3.5	0.4	80.1	0.40	4.1	0.5	8	LA
TKG6AR	79.0	83.6	81.4	78.2 H	80.6	0.41	7.0	2.4	80.9	0.69	6.1	2.5	12	AA
TXLDZM	85.7 *	78.6 H	84.2	84.6	83.3	1.35	7.8	3.2	83.1	1.51	6.5	2.5	12	LA
VVRDNV	78.8	81.8	81.9	78.9	80.4	0.35	5.6	1.7	79.8	0.29	5.5	1.4	12	XX
X4CGVL	77.4	77.9	78.1	79.0	78.1	-0.44	3.8	0.7	78.8	-0.07	5.1	1.8	12	LC
XLGPAN	78.0	77.8	78.4	79.4	78.4	-0.32	5.4	0.7	78.4	-0.23	5.0	1.4	12	AH
XMC6MK	74.3	75.2	77.4	75.9	75.7	-1.25	5.4	1.3	76.9	-0.75	5.6	2.2	12	AH
Y8NQDH	78.9	78.9	78.9	72.3 *	77.2	-0.73	5.3	3.3	78.9	-0.02	4.7	2.9	12	AX
YDGNBL	74.9	73.3	75.6	73.3	74.3	-1.75	4.0	1.2	73.5	-1.99	5.7	2.1	11	AH
YHBRTR	106.6XH	79.1	No Data	78.7	88.1	3.02 X	7.0	16.0H	80.6	0.58	6.1	8.8 H	11	LA
YPX9UH	76.3	76.6	77.5	79.2	77.4	-0.66	5.4	1.3	77.6	-0.50	5.4	2.5	12	LC
ZRQY6L	85.5 *	81.5	85.5	84.0	84.1	1.64	5.7	1.9	84.1	1.89	5.7	1.9	4	XX
ZVF2JM	77.8	78.8	78.2	77.0	77.9	-0.49	5.0	0.7	78.1	-0.33	4.9	1.2	8	LZ

Consensus (All Labs) Results

Wk Mean	78.80	79.15	79.75	79.46	Month Mean	79.35	Grand Mean	78.97
Avg SDr	5.40	4.89	5.20	5.03	Avg SDr	5.13	Avg SDr	5.12
SD btwn Labs	3.15	3.52	3.32	3.44	SD btwn Labs	2.91	SD btwn Labs	2.73
Labs Incld	53	53	53	54	SD btwn Wks	2.16	SD btwn Wks	2.74
Labs Excld	1	1	0	0	Labs Incld	53	Labs Incld	54
Labs not rcvd	0	0	1	0				

Instrument Code List as Reported by the Labs

(AA) - Perkins Model A

(AH) - Perkins Model AH

(AX) - Perkins Mullen Tester (model not specified)

(LA) - L & W Bursting Strength Tester

(LB) - L & W Burst-O-Matic

(LC) - L & W Autoline

(LJ) - L & W Bursting Strength Tester J-Type

(LZ) - L & W (model not specified)

(RE) - Regmed/Mullen Tester

(TB) - TMI Monitor/Burst 1000

(TP) - Technidyne PROFILE/Plus

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D1

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
29HW8G	87.9	88.6	89.6	93.2	89.8	0.42	5.0	2.3	92.1	1.13	4.1	2.7	16	EM
43GWKG	87.0	87.1	88.6	88.2	87.7	-0.02	4.2	0.8	87.4	-0.06	4.4	2.9	12	LC
4TVTDH	91.7	87.1	85.8	86.0	87.7	-0.04	4.0	2.8	85.7	-0.49	4.8	4.5	8	LC
4ZJ7MH	77.2	78.2 *	74.1 *	75.3 *	76.2	-2.44 *	5.8	1.8	79.0	-2.18 *	7.1	2.5	12	MB
7J4UYG	95.3	87.8 H	98.2 *H	93.5	93.7	1.22	8.5	4.4	90.7	0.77	6.5	8.2 H	12	LC
7TPX8G	86.3	86.4	86.5	86.3	86.4	-0.30	4.2	0.1 L	87.1	-0.13	4.1	1.2	16	LD
9A62PE	82.8	82.4	85.8	77.9	82.2	-1.18	4.0	3.2	83.5	-1.05	3.5	2.8	14	LZ
9BJMYF	87.6	85.0	83.4	87.3	85.8	-0.43	5.2	2.0	87.9	0.06	4.3	2.4	16	LC
A2UY4D	83.8	87.0	88.1	89.4	87.1	-0.16	3.8	2.4	88.7	0.26	4.2	2.5	16	LZ
ABWLLC	72.9 *H	82.1	82.2	73.9 *H	77.8	-2.10 *	6.7	5.1	81.7	-1.50	5.2	5.4	8	LZ
AEJYVF	87.3	88.4	91.3	88.0	88.8	0.19	3.4	1.8	88.0	0.11	3.5	2.8	16	LC
B7FKXJ	92.3	95.0	91.2 L	92.2	92.7	1.01	3.6	1.6	95.7	2.03 *	3.9	3.2	16	LZ
C2GL67	87.9	89.4	84.4	90.0	87.9	0.02	3.5	2.5	87.5	-0.03	3.7	1.8	8	LD
CF2287	85.5	86.9	83.2	86.2	85.5	-0.50	3.6	1.6	81.7	-1.48	4.5	5.9 H	16	EM
CFWJA8	88.7	87.3	86.6	86.1	87.2	-0.14	3.3	1.1	87.5	-0.04	3.7	1.3	16	TH
CH7M74	85.2	86.7	86.8	86.6	86.3	-0.32	3.9	0.8 L	87.2	-0.10	3.8	1.4	16	LD
DRCP6A	78.6	82.1 H	84.5	89.4	83.6	-0.88	6.0	4.5	84.3	-0.85	5.7	5.8 H	8	LC
EUDCW6	84.1	85.2 L	85.2	86.1	85.2	-0.56	2.4	0.8	84.5	-0.78	2.9	1.0	16	LD
EUTHA9	94.4	90.3	87.9	95.3	92.0	0.87	4.1	3.5	92.0	1.10	4.1	3.5	4	LD
F2QKX7	95.0	95.5	98.3 *	95.8	96.1	1.74	5.5	1.5	93.7	1.53	5.0	2.3	16	LX
FDK2M8	91.5	90.7	89.5	89.8	90.4	0.53	2.8	0.9	90.2	0.64	3.4	1.2	16	LD
GPVQ23	89.8	91.3	91.7	90.5	90.8	0.63	4.1	0.8	88.6	0.25	3.9	2.7	16	LC
GX7TM4	88.8	89.8	88.5	89.1	89.1	0.26	3.6	0.6 L	86.7	-0.22	3.9	2.7	16	LC
JCB8B3	83.5	87.4	81.4	77.2	82.4	-1.15	3.3	4.2	83.6	-1.01	3.1	3.4	16	LC
JD8NMZ	95.5	89.1	97.2	95.9	94.4	1.39	3.7	3.6	92.7	1.27	4.0	4.4	16	LD
K6B8B2	97.4	89.9	92.3	98.3	94.5	1.39	4.1	4.0	90.9	0.83	3.9	4.9	16	LD
KBJM4X	84.1	85.4	83.0	86.0	84.6	-0.67	3.4	1.3	82.7	-1.25	3.5	2.4	16	EN
LALKTZ	88.8	87.1	90.9	88.5	88.8	0.21	4.3	1.6	88.4	0.20	4.2	1.5	8	EM
MCL863	88.2	86.5	88.7	86.3	87.4	-0.09	3.7	1.2	87.7	0.03	3.2	1.2	13	LC
MHE4TU	83.3	83.2	83.9	84.9	83.8	-0.84	3.1	0.8	84.4	-0.81	3.9	2.0	12	LD
MHVA8X	86.8	89.7	89.6	88.2	88.5	0.15	3.7	1.4	86.6	-0.26	3.9	2.2	16	LC
MN3QNY	128.8 X	95.3	66.8 X	87.0	94.5	1.39	5.1	25.8 H	92.1	1.13	4.7	12.1 H	16	LC
N2MTJW	89.8	88.2	89.9	89.9	89.5	0.34	3.8	0.8	88.2	0.14	3.4	2.0	16	LD
NKD2GR	91.9	93.8	93.5	94.9	93.5	1.19	3.6	1.2	93.9	1.58	4.2	1.7	16	LD
NRCDR3	82.3	82.0 L	82.8	81.5	82.1	-1.20	2.1	0.6 L	82.1	-1.39	2.6	1.2	16	EX

Report #557

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D1

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
Q2WGXT	82.2	83.6 L	83.9 L	83.1	83.2	-0.97	2.2	0.7 L	84.1	-0.90	2.9	1.0	16	LD
QBGL6T	89.1	86.0	84.1	84.1	85.8	-0.42	3.5	2.3	85.5	-0.54	3.6	1.5	16	LD
QN2AUW	96.2	95.2	93.4	92.9	94.4	1.38	4.2	1.6	94.1	1.63	3.8	3.4	16	TC
QW2MZR	92.3	88.4 H	90.0 H	86.8	89.4	0.32	7.4	2.4	88.6	0.25	6.7	3.6	14	LA
QWVKXZ	81.9	84.2	84.5	83.4	83.5	-0.91	4.0	1.2	84.4	-0.82	3.8	1.2	16	EM
RN68NT	82.0	94.4	90.2	82.6	87.3	-0.11	4.2	6.0	90.3	0.67	4.0	4.0	16	LC
T3F8XN	82.1 H	94.2	95.0	97.5	92.2	0.91	6.2	6.9	89.8	0.55	4.5	4.1	16	LC
TAJ27X	88.7 L	89.4	89.7 L	89.8	89.4	0.32	2.4	0.5 L	87.3	-0.07	2.2	1.5	16	LZ
TKG6AR	84.5	85.3	86.3	84.7	85.2	-0.56	3.0	0.8	85.1	-0.64	3.1	1.2	16	LD
VFE6NR	94.1 L	90.7 L	90.9 L	92.5 L	92.0	0.88	1.2	1.6	92.3	1.19	1.4	1.5	16	TD
W6T2GT	71.6 *	68.9 X	68.2 X	69.5 X	69.6	-3.83 X	4.1	1.5	74.8	-3.23 X	4.6	4.7	12	MB
W7433R	85.4	85.7	85.0	85.3	85.3	-0.52	2.8	0.3 L	86.7	-0.24	3.1	1.9	16	TH
X4CGVL	90.6	92.5	89.1	95.3	91.9	0.85	3.2	2.7	92.3	1.19	3.9	2.2	16	LC
XLGPAN	90.0	88.8 L	86.0	97.0	90.4	0.54	4.2	4.7	88.9	0.33	3.7	2.8	16	EM
XV233R	84.0	85.0	83.0	83.9	84.0	-0.81	4.4	0.8	83.9	-0.95	4.0	1.5	16	LD
XWWK6T	89.5	86.8	90.0	89.0	88.8	0.20	4.1	1.4	88.8	0.29	4.1	1.4	4	EX
Y8NQDH	102.6 *	98.0 *	99.3 *	99.8 *	99.9	2.53 *	4.5	1.9	96.1	2.14 *	4.8	3.6	16	LZ
YHBRTR	82.4	87.8	83.5	87.4 H	85.3	-0.54	5.3	2.7	84.8	-0.71	4.8	3.1	16	LC
YPX9UH	86.3	82.3	84.3	85.7	84.7	-0.67	4.0	1.8	84.9	-0.69	3.8	2.4	12	LC
ZVF2JM	81.6	75.5 X	74.0 *	74.4 *	76.4	-2.40 *	3.7	3.5	79.3	-2.10 *	4.2	2.9	16	LC

Consensus (All Labs) Results

Wk Mean	87.22	88.03	87.67	87.96	Month Mean	87.83	Grand Mean	87.62
Avg SDr	4.34	4.54	4.08	4.01	Avg SDr	4.26	Avg SDr	4.14
SD btwn Labs	5.82	4.10	5.14	5.84	SD btwn Labs	4.77	SD btwn Labs	3.96
Labs Incld	54	53	53	54	SD btwn Wks	4.35	SD btwn Wks	3.44
Labs Excld	1	2	2	1	Labs Incld	54	Labs Incld	54
Labs not rcvd	0	0	0	0				

Report #557

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D1

TAPPI Official Test Method T822

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200

(EN) - Emerson 2200

(EX) - Emerson (model not specified)

(LA) - L&W Autoline

(LC) - L & W Crush Tester 48

(LD) - L&W Crush Tester 248

(LX) - L & W 506

(LZ) - L & W Crush Tester (model not specified)

(MB) - Messmer Buchel K440

(TC) - TMI Monitor/Compression Tester, Model 17-37

(TD) - TMI Digital Crush Tester, Model 17-09

(TH) - TMI Compression Tester, Model 17-76

Report #557

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 36 lb Linerboard - 36Z3

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
29HW8G	83.3	85.6	86.0	82.7	84.4	1.02	3.0	1.7	84.6	1.15	4.1	1.3	12	EM
43GWKG	81.2	83.8	81.3	82.7	82.2	0.39	2.5	1.2	83.4	0.80	2.9	1.8	12	LC
4TVTDH	80.5	76.0	74.4	77.7	77.2	-1.10	4.3	2.6	77.2	-0.92	4.3	2.6	4	LC
4ZJ7MH	75.6 H	74.0	74.2 H	72.4 *H	74.0	-2.02 *	6.8	1.3	73.6	-1.91	7.9	3.1	12	MB
7J4UYG	86.2	67.9 X	89.9 *	87.7	82.9	0.59	3.5	10.1 H	82.9	0.67	4.6	8.2 H	12	LC
7TPX8G	80.1	80.2	80.1	80.2	80.2	-0.22	2.7	0.1 L	80.0	-0.14	2.8	0.3 L	12	LD
9A62PE	76.6	77.5	80.8	74.7	77.4	-1.03	4.1	2.5	75.4	-1.41	4.6	5.3	12	LZ
9BJMYF	78.3	80.3	76.4	80.5	78.9	-0.59	3.4	1.9	79.7	-0.22	3.8	2.4	12	LC
A2UY4D	81.7	81.2	80.4	85.4	82.2	0.37	3.0	2.2	83.1	0.73	3.0	3.1	12	LZ
ABWLLC	65.0 XH	80.5	80.1	66.6 XH	73.0	-2.31 *	6.3	8.4 H	73.0	-2.06 *	6.3	8.4 H	4	LZ
AEJYVF	81.3	81.3	80.5	81.4	81.1	0.06	3.2	0.4 L	80.7	0.05	3.1	2.7	12	LC
B7FKXJ	83.4	86.3	85.1	85.0	85.0	1.18	3.2	1.2	86.5	1.67	3.1	3.8	12	LZ
C2GL67	80.6	80.6	79.8	81.2	80.6	-0.10	2.3	0.6 L	81.3	0.24	2.3	1.4	8	LD
CF2287	79.4	82.5	79.7	82.3	81.0	0.02	2.5	1.7	78.2	-0.64	4.3	5.0	12	EM
CFWJA8	80.8	81.9	81.7	78.0	80.6	-0.10	3.5	1.8	81.1	0.18	3.1	1.8	12	TH
CH7M74	80.9	84.5	82.8	83.3	82.9	0.57	3.4	1.5	82.3	0.51	3.1	1.3	12	LD
DRCP6A	73.0 H	72.6 *H	80.3 L	81.6	76.9	-1.18	5.4	4.7	76.4	-1.14	5.8	4.2	8	LC
EUDCW6	77.2	77.3	77.2	79.2	77.7	-0.94	2.1	1.0	78.1	-0.67	2.3	1.4	12	LD
EUTHA9	82.9	84.9	80.8	84.8	83.4	0.71	2.7	1.9	84.1	1.00	2.8	1.6	8	LD
F2QKX7	87.7	88.4 H	86.6	83.6	86.6	1.65	4.8	2.1	85.9	1.50	4.8	1.4	12	LX
FDK2M8	82.1	83.8 L	84.7	82.1	83.2	0.66	2.4	1.3	81.7	0.34	2.6	1.5	12	LD
GPVQ23	81.0	83.2	84.6	83.2	83.0	0.61	2.7	1.5	81.4	0.26	3.0	3.4	12	LC
JCB8B3	76.5	79.4	75.4 L	76.8	77.0	-1.14	2.6	1.7	77.5	-0.82	2.5	2.1	12	LC
JD8NMZ	89.3 *	80.8	85.6	87.4	85.8	1.42	3.3	3.6	84.6	1.14	2.8	3.8	12	LD
K6B8B2	85.2	73.0 *	88.2	82.8	82.3	0.41	3.8	6.6	82.4	0.54	3.2	4.3	12	XX
KBJM4X	80.5 L	78.8	79.1	77.3	78.9	-0.59	2.3	1.3	78.5	-0.54	2.9	1.0	12	EN
LALKTZ	80.1	81.5	83.0	81.9	81.6	0.21	3.3	1.2	81.6	0.32	3.3	1.2	4	EM
MCL863	82.2	84.9	82.7	78.9	82.1	0.36	2.7	2.5	82.6	0.59	2.5	2.4	9	LC
MHE4TU	77.0	80.5	81.3	81.7	80.1	-0.23	2.1	2.2	79.0	-0.40	8.4	3.0	8	LD
MHVA8X	79.8	82.8 L	85.5	81.1	82.3	0.40	2.1	2.5	81.7	0.34	2.6	1.8	12	LC
MN3QNY	107.9XH	88.9	59.4 XH	78.6 H	83.7	0.82	7.7	20.2 H	82.9	0.66	5.8	13.2 H	12	LC
N2MTJW	83.4	82.1	83.4	80.9	82.5	0.45	2.9	1.2	81.9	0.38	2.8	1.2	12	LD
NKD2GR	83.4	85.7	85.8	85.2	85.0	1.20	3.8	1.1	83.8	0.92	3.5	1.8	12	LD
NRCDR3	77.1	77.2	77.3	76.4	77.0	-1.15	2.2	0.4 L	75.7	-1.33	2.3	1.2	12	EX
Q2WGXT	75.5 L	76.5	76.0	77.7	76.4	-1.32	2.0	1.0	77.3	-0.89	2.1	2.1	12	LD

Report #557

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 36 lb Linerboard - 36Z3

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QBGL6T	82.1	79.2	79.7	79.4	80.1	-0.25	3.1	1.3	79.8	-0.20	2.7	1.6	12	LD
QN2AUW	86.4	86.1	83.2	84.5	85.1	1.21	2.8	1.4	85.7	1.46	3.1	2.2	12	TC
QW2MZR	82.9	84.4	84.0 H	72.4 *H	80.9	0.00	5.7	5.7	81.2	0.21	5.0	4.8	11	LA
QWVKXZ	79.5	78.2	77.8	77.2	78.2	-0.80	2.3	1.0	79.0	-0.42	2.3	1.3	12	EM
RN68NT	78.3	82.3	84.9	78.3	80.9	0.01	3.1	3.3	82.8	0.65	3.6	3.4	12	LC
T3F8XN	77.8	85.4	82.6	85.6	82.9	0.57	3.6	3.6	79.9	-0.15	4.0	3.4	12	LC
TAJ27X	82.4	80.8	81.0	81.8	81.5	0.17	2.7	0.7	81.2	0.19	2.1	0.6	8	LZ
TKG6AR	79.9	79.7 L	80.6	78.7	79.7	-0.35	2.1	0.8	78.8	-0.46	2.1	1.4	12	LD
VFE6NR	72.5 *L	71.9 *L	75.6	74.8 L	73.7	-2.11 *	1.5	1.8	73.8	-1.85	1.5	1.7	12	TD
W6T2GT	64.3 X	62.5 X	64.7 X	62.4 X	63.5	-5.11 X	3.4	1.2	66.9	-3.76 X	3.3	4.1	8	MB
W7433R	81.6	83.3	83.4 L	82.8	82.8	0.54	2.0	0.8	80.9	0.10	2.6	1.6	12	TH
X4CGVL	85.6	84.6	84.8	88.1	85.8	1.42	2.4	1.6	86.1	1.55	2.6	1.1	12	LC
XLGPAN	82.9	83.0	79.6	86.2	83.0	0.60	2.4	2.7	82.4	0.52	2.2	2.0	12	EM
XV233R	78.6	78.3	78.7 H	77.8	78.3	-0.76	3.5	0.4 L	78.9	-0.45	3.0	1.4	12	LD
XWWK6T	79.7	79.9	81.6	81.9	80.8	-0.04	3.7	1.1	80.8	0.08	3.7	1.1	4	EX
Y8NQDH	91.8 X	89.5 *	88.0	89.7 *	89.7	2.58 *	3.5	1.6	87.8	2.02 *	3.8	3.3	12	LZ
YHBRTR	71.5 *	77.4 H	74.6	78.7	75.6	-1.57	3.9	3.2	76.2	-1.18	4.0	2.9	12	LC
YPX9UH	80.5	82.1	77.5	79.3	79.9	-0.31	3.1	1.9	79.6	-0.25	3.0	1.5	12	LC
ZVF2JM	72.9	68.5 X	69.9 X	69.5 X	70.2	-3.14 X	3.6	1.9	70.7	-2.71 *	4.0	1.8	8	LC

Consensus (All Labs) Results

Wk Mean	80.37	81.26	81.34	81.05	Month Mean	80.92	Grand Mean	80.48
Avg SDr	3.42	3.13	3.24	3.61	Avg SDr	3.50	Avg SDr	3.73
SD btwn Labs	3.80	4.01	3.78	3.87	SD btwn Labs	3.41	SD btwn Labs	3.61
Labs Incld	50	51	51	51	SD btwn Wks	4.00	SD btwn Wks	3.46
Labs Excld	4	3	3	3	Labs Incld	52	Labs Incld	53
Labs not rcvd	0	0	0	0				

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200

(EN) - Emerson 2200

(EX) - Emerson (model not specified)

(LA) - L&W Autoline

(LC) - L & W Crush Tester 48

(LD) - L&W Crush Tester 248

(LX) - L & W 506

(LZ) - L & W Crush Tester (model not specified)

(MB) - Messmer Buchel K440

(TC) - TMI Monitor/Compression Tester, Model 17-37

(TD) - TMI Digital Crush Tester, Model 17-09

(TH) - TMI Compression Tester, Model 17-76

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D1

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2UJ8YN	24.3	25.6 *	25.9 *	23.6	24.8	1.97	1.9	1.1	25.1	2.69 *	2.1	1.0	16	LA
3JVHTM	23.7	22.1	23.5	23.9	23.3	0.68	2.2	0.8	23.3	0.97	1.9	0.9	16	LA
3MUUPM	45.3 XL	45.3 XL	45.6 XL	45.2 XL	45.4	19.36 X	0.0	0.2	34.3	11.42X	0.0	12.3 H	16	LU
43GWKG	20.7	22.5	19.0 *	24.7	21.7	-0.67	2.2	2.4 H	21.1	-1.12	1.7	1.5	12	LU
4AY8RQ	20.5	No Data	No Data	22.7	21.6	-0.78	1.6	1.6	35.4	12.47X	2.5	10.8 H	6	XX
4ZJ7MH	23.2 L	24.4 L	24.5 L	24.4 L	24.1	1.39	0.3	0.7	23.7	1.35	0.5	0.8	12	BK
78LAFK	23.0	22.5	23.9	23.6	23.2	0.62	1.4	0.6	23.0	0.69	1.6	0.8	16	LU
8ZMX6A	21.4	21.4	21.1	21.7	21.4	-0.93	1.7	0.2	21.1	-1.15	1.6	0.6	12	LW
9A62PE	21.8	22.9	22.4	21.6	22.2	-0.27	1.9	0.6	21.7	-0.59	1.8	0.6	14	LZ
9BJMYF	23.3	23.8	22.6	23.4	23.3	0.64	1.9	0.5	23.0	0.70	1.7	0.5	16	LU
A2UY4D	19.4 *	19.9	20.1	20.6	20.0	-2.12 *	1.9	0.5	20.8	-1.47	1.8	0.8	16	LW
ABWLLC	21.9	21.7	22.0	22.8	22.1	-0.34	2.0	0.5	21.9	-0.41	1.9	0.5	15	LY
AEJYVF	21.8	20.7	21.9	22.3	21.7	-0.70	1.4	0.7	21.6	-0.69	1.5	0.7	16	LA
C2GL67	21.6	21.3	21.3	21.9	21.5	-0.82	1.8	0.3	21.6	-0.71	1.9	0.2	8	LY
CFWJA8	21.9	22.0	22.0	22.3	22.0	-0.38	1.0	0.2	22.1	-0.23	1.0	0.2	16	TT
CH7M74	21.1	22.9	22.1	22.2	22.1	-0.36	2.0	0.7	22.4	0.07	2.1	0.7	16	LA
CHPHHD	23.5	25.2	24.3	24.3	24.3	1.56	2.2	0.7	22.2	-0.09	1.9	2.6 H	11	TT
D2BQX6	22.6	22.3	22.2 L	22.5	22.4	-0.09	0.8	0.2	22.5	0.17	0.9	0.2	16	TT
D77KV7	21.3 L	20.8 L	21.6 L	21.7 L	21.4	-0.95	0.4	0.4	20.9	-1.34	0.4	0.6	16	LA
DRCP6A	20.6	20.6	20.4	19.7 *	20.3	-1.85	1.6	0.4	20.4	-1.77	1.5	0.5	8	XX
FDK2M8	21.8	21.7	21.0	20.8	21.3	-1.00	1.3	0.5	21.8	-0.52	1.4	0.7	16	BK
GPVQ23	23.0 L	23.0 L	24.8	21.8 L	23.2	0.56	0.8	1.3	22.7	0.34	1.7	2.6 H	16	LA
GX7TM4	24.0	23.4	24.8	23.2	23.8	1.13	1.6	0.7	23.6	1.20	1.9	0.6	16	LW
JD8NMZ	23.3	20.7	23.1	23.8	22.7	0.20	1.7	1.4	22.7	0.41	1.8	1.2	16	LZ
KBJM4X	21.9	20.9	20.1	21.0	21.0	-1.27	2.0	0.7	20.8	-1.43	1.9	0.7	16	LY
MCL863	22.4	22.6	21.6	21.9	22.1	-0.32	1.7	0.5	22.2	-0.12	1.7	0.7	13	LW
MHE4TU	21.5	21.7	22.0	21.2	21.6	-0.76	1.4	0.3	21.6	-0.67	1.7	0.5	12	LW
MHVA8X	22.1	21.2	22.6	22.3	22.0	-0.39	1.7	0.6	21.7	-0.56	1.8	0.5	16	LU
MN3QNY	21.7 L	No Data	21.2 L	22.6 L	21.8	-0.56	0.5	0.7	21.3	-0.92	0.5	0.7	15	LW
N2MTJW	23.5	24.9	24.0	24.0	24.1	1.35	2.0	0.5	23.7	1.33	1.9	0.6	16	LY
NJ2B72	24.2	22.6	21.8	21.5	22.5	0.03	1.3	1.2	23.0	0.71	1.8	1.0	16	LZ
NKD2GR	24.9	24.1	24.3	25.7 *	24.7	1.90	2.3	0.7	23.8	1.46	2.0	0.9	16	XX
QBGL6T	22.3	22.7	20.6	22.2	21.9	-0.47	1.8	0.9	21.7	-0.61	1.8	0.7	16	LU
QN2AUW	23.4 L	23.6 L	23.6 L	22.6 L	23.3	0.67	0.4	0.5	23.0	0.68	0.9	1.3	16	LA
QV68NU	20.6 L	22.0 L	21.3 L	20.8	21.2	-1.13	0.6	0.6	20.8	-1.39	0.6	0.9	16	LW

Report #557

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D1

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QW2MZR	22.4 L	21.5 L	20.5 L	22.9 L	21.8	-0.58	0.5	1.0	21.6	-0.65	0.4	1.3	16	LA
QWVKXZ	23.7	23.6	23.5	24.2	23.8	1.06	1.7	0.3	22.9	0.55	1.5	0.8	16	LZ
RN68NT	22.4 L	22.0 L	20.8 L	22.5 L	21.9	-0.49	0.4	0.8	22.3	0.04	0.9	1.1	16	LA
T3F8XN	21.6	23.8	22.3	23.0	22.7	0.14	1.0	1.0	23.0	0.71	1.0	0.7	16	LY
TKG6AR	19.8	20.7	21.2	20.7	20.6	-1.61	2.1	0.6	20.6	-1.58	1.8	0.4	16	LW
TXLDZM	23.5	24.7	24.6	23.5	24.1	1.33	2.7	0.6	24.1	1.74	2.3	0.6	16	LW
VVRDNV	23.3	24.9	22.3	24.1	23.7	0.98	1.4	1.1	23.2	0.81	1.5	0.7	16	XX
X4CGVL	24.6 L	23.9 L	24.8 L	24.7 L	24.5	1.67	0.0	0.4	23.0	0.69	0.0	1.2	16	LA
XMC6MK	24.8	22.6	24.0	20.7	23.0	0.43	2.3	1.8 H	22.9	0.54	2.4	1.2	12	LU
XV233R	21.3	21.6	21.9	21.1	21.5	-0.87	1.7	0.4	21.0	-1.28	1.8	0.5	16	LY
YDGNBL	21.5	21.9	22.9	23.2	22.4	-0.11	1.8	0.9	22.9	0.53	1.8	1.2	16	LU
YHBRTR	24.1	23.5	23.9	24.3	23.9	1.23	1.3	0.3	23.2	0.87	1.6	0.8	16	LU
YPX9UH	23.2 L	23.3 L	22.5 L	21.5 L	22.6	0.11	0.4	0.8	22.1	-0.21	0.4	0.7	12	LA
ZVF2JM	22.5	23.2	23.4	21.8	22.7	0.19	1.9	0.7	22.6	0.25	2.1	0.8	16	LW

Consensus (All Labs) Results

Wk Mean	22.43	22.58	22.47	22.57	Month Mean	22.50	Grand Mean	22.30
Avg SDr	1.72	1.59	1.65	1.54	Avg SDr	1.62	Avg SDr	1.63
SD btwn Labs	1.31	1.38	1.53	1.33	SD btwn Labs	1.18	SD btwn Labs	1.05
Labs Incld	48	46	47	48	SD btwn Wks	0.84	SD btwn Wks	0.96
Labs Excld	1	1	1	1	Labs Incld	48	Labs Incld	47
Labs not rcvd	0	2	1	0				

Instrument Code List as Reported by the Labs

(BK) - Buchel Strip Compression Tester BK-155

(LA) - L & W Autoline

(LU) - L & W 52 without moisture correction(was 53)

(LW) - L & W 53 with moisture correction (was 53M)

(LY) - L & W 152 without moisture correction

(LZ) - L & W (model not specified)

(TT) - TMI Short Span Compression, 17-34 (MB K455)

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 36 lb Linerboard - 36Z3

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2UJ8YN	23.1	23.5	23.0	23.8	23.3	1.63	1.2	0.4	23.4	1.93	1.2	0.3	8	LA
3JVHTM	23.0	22.2	22.4	21.9	22.4	0.67	1.4	0.4	22.5	0.96	1.5	0.5	12	LA
3MUUPM	33.6 XL	34.1 XL	34.2 XL	34.1 XL	34.0	11.95 X	0.0	0.3	25.6	4.25 X	0.0	6.2 H	12	LU
43GWKG	20.4	20.6	20.5	21.0	20.6	-1.01	1.3	0.3	20.7	-0.91	1.5	0.6	12	LU
4AY8RQ	20.8	No Data	No Data	20.2	20.5	-1.13	1.2	0.4	20.5	-1.16	1.2	0.4	2	XX
4ZJ7MH	24.0 *L	24.7 *L	24.0 *L	23.0 L	23.9	2.21 *	0.3	0.7	22.7	1.14	0.3	1.0	12	BK
78LAFK	21.2	22.3	21.8	22.3	21.9	0.24	1.0	0.5	21.7	0.14	1.1	0.5	12	LU
8ZMX6A	20.9	21.4	20.9	20.8	21.0	-0.66	1.3	0.3	20.9	-0.69	2.7	0.3	8	LW
9A62PE	21.3	21.8	22.0	19.7	21.2	-0.46	1.1	1.0	21.1	-0.49	1.1	0.6	12	LZ
9BJMYF	22.4	22.0	21.8	21.8	22.0	0.31	1.1	0.3	21.9	0.28	1.2	0.3	12	LU
A2UY4D	19.4 *	19.3 *	19.4	19.0 *	19.3	-2.29 *	1.2	0.2	20.2	-1.47	1.3	0.8	12	LW
ABWLLC	21.6	21.4	21.1	21.0	21.2	-0.42	1.5	0.3	21.3	-0.33	1.3	0.2	12	LY
AEJYVF	21.3	22.1	19.9	20.5	21.0	-0.69	1.1	1.0	21.2	-0.44	1.0	0.7	12	LA
C2GL67	20.9	21.0	20.9	21.3	21.0	-0.62	1.4	0.2	21.0	-0.59	1.4	0.2	8	LY
CFWJA8	21.5	21.5 L	21.4	21.7	21.5	-0.11	0.7	0.1	21.5	-0.14	0.8	0.2	12	TT
CH7M74	20.2	22.2	21.4	22.2	21.5	-0.16	1.0	0.9	21.6	0.00	1.2	0.6	12	LA
CHPHHD	22.8	23.3	23.4	23.6	23.3	1.55	1.7	0.4	23.2	1.70	1.6	0.4	8	TT
D2BQX6	22.3	21.9	22.3	21.6	22.0	0.35	0.7	0.4	21.9	0.29	0.8	0.3	12	TT
D77KV7	21.0 L	20.8 L	20.2 L	20.2 L	20.5	-1.09	0.2	0.4	20.3	-1.32	0.2	0.3	12	LA
DRCP6A	19.9	19.6	19.5	19.9	19.7	-1.90	1.0	0.2	19.5	-2.25 *	1.1	0.5	8	XX
FDK2M8	21.2	20.3	20.8	20.2	20.6	-1.00	1.0	0.5	20.9	-0.73	1.1	0.5	12	BK
GPVQ23	22.5	21.5 L	22.1	22.3	22.1	0.42	0.9	0.5	22.6	1.03	1.2	0.7	12	LA
GX7TM4	23.6	23.2	23.7	23.0	23.4	1.65	1.4	0.4	22.9	1.39	1.4	0.7	12	LW
JD8NMZ	23.0	21.0	22.0	23.1	22.3	0.60	1.5	1.0	21.9	0.35	1.4	1.1	12	LZ
KBJM4X	21.5	20.3	20.6	20.8	20.8	-0.84	1.3	0.5	20.5	-1.17	1.1	0.6	8	LY
MCL863	21.8	21.1	21.0	21.3	21.3	-0.35	1.4	0.4	21.5	-0.09	1.3	0.3	9	LW
MHE4TU	21.3	21.1	21.1	20.9	21.1	-0.55	1.3	0.2	21.1	-0.57	1.1	0.2	8	LW
MHVA8X	21.0	21.7	21.5	21.3	21.4	-0.29	1.1	0.3	21.2	-0.40	1.1	0.3	12	LU
MN3QNY	21.1	No Data	20.0 L	20.8 L	20.6	-1.01	0.6	0.5	19.7	-2.02 *	0.7	4.3 H	11	LW
N2MTJW	23.0	23.3	23.2	23.1	23.1	1.43	1.2	0.1	23.2	1.64	1.2	0.3	12	LY
NJ2B72	25.4 X	24.2 *	22.8	23.3	23.9	2.19 *	2.1	1.1	23.1	1.59	1.7	1.0	12	LZ
NKD2GR	22.2	22.3	22.6	22.9	22.5	0.80	1.7	0.3	22.6	1.09	1.4	0.3	12	XX
QBGL6T	21.2	20.9	20.6	20.6	20.8	-0.82	1.1	0.3	21.2	-0.38	1.2	0.4	12	LU
QN2AUW	22.3 L	21.8 L	22.6 L	21.3 L	22.0	0.34	0.2	0.6	22.2	0.64	0.4	0.8	12	LA
QV68NU	20.9	20.9	20.0 L	19.8 L	20.4	-1.24	0.6	0.6	20.4	-1.28	0.5	1.4 H	11	LW

Report #557

Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 36 lb Linerboard - 36Z3

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QW2MZR	84.5 XH	20.5 L	20.9 L	20.6 L	36.6	14.48 X	2.5	31.9 H	26.6	5.20 X	1.6	20.4 H	10	LA
QWVKXZ	22.9	21.9	22.2	23.3	22.6	0.88	1.4	0.6	22.1	0.55	1.2	0.6	12	LZ
RN68NT	21.3 L	21.2 L	20.0 L	21.7 L	21.0	-0.60	0.2	0.7	21.1	-0.49	0.2	0.5	12	LA
T3F8XN	21.0	22.6 L	21.9	22.5	22.0	0.33	0.7	0.7	21.8	0.26	0.6	1.0	12	LY
TKG6AR	20.4	20.3	20.1	20.6	20.3	-1.28	1.3	0.2	20.5	-1.19	1.3	0.4	12	LW
TXLDZM	23.0	21.1	23.3	22.9	22.6	0.89	1.9	1.0	23.0	1.45	1.6	0.7	12	LW
VVRDNV	22.1	22.2	21.9	22.0	22.0	0.36	0.8	0.1	22.2	0.63	1.0	0.4	12	XX
X4CGVL	22.5 L	22.9 L	22.1 L	21.8 L	22.3	0.65	0.0	0.5	21.4	-0.24	0.0	1.2	12	LA
XMC6MK	21.7	24.4 *	20.8	19.3	21.5	-0.13	1.1	2.2 H	21.4	-0.15	1.3	1.2	12	LU
XV233R	21.9	21.6	21.5	21.3	21.6	-0.10	1.4	0.3	21.3	-0.31	1.2	0.6	12	LY
YDGNBL	22.0	22.6	21.9	22.1	22.1	0.45	1.4	0.3	22.6	1.10	1.4	0.8	10	LU
YHBRTR	21.9	22.6	22.2 L	22.0 L	22.2	0.48	0.7	0.3	22.0	0.45	0.8	0.4	12	LU
YPX9UH	21.8 L	21.6 L	21.3 L	21.3 L	21.5	-0.18	0.2	0.2	21.5	-0.12	0.2	0.4	12	LA
ZVF2JM	22.1	21.7	22.7	22.2	22.2	0.50	1.4	0.4	21.9	0.32	1.4	0.5	8	LW

Consensus (All Labs) Results

Wk Mean	21.72	21.79	21.55	21.53	Month Mean	21.66	Grand Mean	21.60
Avg SDr	1.15	1.25	1.06	1.20	Avg SDr	1.18	Avg SDr	1.21
SD btwn Labs	0.99	1.18	1.14	1.18	SD btwn Labs	1.03	SD btwn Labs	0.95
Labs Incld	46	46	47	48	SD btwn Wks	0.61	SD btwn Wks	0.89
Labs Excld	3	1	1	1	Labs Incld	47	Labs Incld	47
Labs not rcvd	0	2	1	0				

Instrument Code List as Reported by the Labs

(BK) - Buchel Strip Compression Tester BK-155

(LA) - L & W Autoline

(LU) - L & W 52 without moisture correction (was 53)

(LW) - L & W 53 with moisture correction (was 53M)

(LY) - L & W 152 (was 52M)

(LZ) - L & W (model not specified)

(TT) - TMI Short Span Compression, 17-34 (MB K455)

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 228

Roughness - Stylus Method, 69 lb Linerboard - 69C

TAPPI Provisional Test Method T575

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV		SDr	Mean	CPV		SDr	Months	Inst
3JVHTM	113.3	-1.09		9.7	112.6	-1.13		12.4	4	LA
4ZJ7MH	147.5	0.87		11.1	140.6	0.33		15.5	3	EV
A2UY4D	119.0	-0.76		9.0	131.4	-0.15		10.8	4	EV
ABWLLC	154.4	1.27		11.6	155.8	1.12		13.6	4	EV
D77KV7	114.7	-1.01		8.5	119.2	-0.78		10.2	4	EV
EUTHA9	118.3	-0.80		10.8	118.3	-0.83		10.8	1	EV
JD8NMZ	147.4	0.86		14.8	147.7	0.70		12.9	4	LA
KBJM4X	156.4	1.38		11.6	151.1	0.88		12.3	4	EV
LNHW24	130.7	-0.09		15.2	133.2	-0.06		15.1	3	EV
MHE4TU	132.6	0.01		12.7	141.6	0.38		13.2	3	EV
MN3QNY	138.5	0.36		15.6	138.5	0.22		13.8	4	EV
NJ2B72	232.2	5.73	X	107.9	177.3	2.24	*	83.7	4	LA
QBGL6T	141.8	0.54		6.9	142.0	0.40		10.4	4	EV
QW2MZR	144.5	0.70		26.9	210.0	3.95	X	23.6	4	EV
RN68NT	134.0	0.10		17.9	139.0	0.25		19.8	4	LA
T3F8XN	88.9	-2.49	*	7.8	96.1	-1.99		9.9	4	EV
X4CGVL	131.3	-0.06		17.1	121.9	-0.65		13.7	4	LA
YHBRTR	112.5	-1.13		12.5	107.0	-1.42		11.5	4	LA
YPX9UH	149.9	1.01		19.4	151.0	0.87		19.7	3	LA
ZVF2JM	138.1	0.33		9.7	127.1	-0.37		10.1	4	EV

Consensus (All Labs) Results

Month Mean	132.31	Grand Mean	134.29
Avg SDr	13.93	Avg SDr	23.22
SD btwn Labs	17.43	SD btwn Labs	19.17
Labs Incld	19	Labs Incld	19

Instrument Code List as Reported by the Labs

(EV) - Emveco Microgage Model 210-R

(LA) - L & W Autoline

Report #557

Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42D2

TAPPI Provisional Test Method T538

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
CH7M74	402.8	1.48	7.7	394.7	1.60	9.0	2	XX
G8UTUZ	377.7	-0.19	8.8	377.7	0.19	8.8	1	XX
MHVA8X	364.7	-1.05	8.8	363.9	-0.96	7.2	2	XX
QN2AUW	370.0	-0.70	6.9	367.5	-0.66	7.2	2	XX
Y8NQDH	387.3	0.45	5.1	373.4	-0.17	5.8	2	XX

Consensus (All Labs) Results

Month Mean	380.50	Grand Mean	375.41
Avg SDr	7.61	Avg SDr	7.71
SD btwn Labs	15.09	SD btwn Labs	12.00
Labs Incld	5	Labs Incld	5

Instrument Code List as Reported by the Labs

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 231

Internal Bond, 36 lb Linerboard - 36Z

TAPPI Provisional Test Method T569

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
43GWKG	160.0	-0.07	10.0	160.0	-0.14	10.0	1	XX
78LAFK	155.6	-0.20	5.0	139.8	-1.25	6.9	4	TM
9KNKYC	161.0	-0.04	3.9	160.0	-0.14	5.5	4	TM
ABWLLC	174.2	0.34	14.6	174.2	0.64	14.6	1	XX
AEJYVF	207.2	1.30	11.8	199.0	2.00 *	9.1	4	HY
CH7M74	79.1	-2.42 *	2.4	77.3	-4.69 X	2.3	4	LZ
DRCP6A	127.1	-1.02	8.7	133.3	-1.61	15.5	2	SC
EUTHA9	159.0	-0.10	2.7	159.0	-0.20	2.7	1	HY
MHE4TU	213.0	1.47	8.5	200.5	2.09 *	12.2	3	HY
MHVA8X	183.2	0.60	3.3	178.1	0.85	3.7	4	HY
MN3QNY	230.0	1.96	29.8	227.5	3.57 X	20.3	4	SC
NJ2B72	165.0	0.08	15.2	164.2	0.09	12.4	2	TM
Q2WGXT	176.0	0.40	6.2	160.9	-0.09	7.2	4	SC
QBGL6T	144.8	-0.51	8.6	147.6	-0.82	6.4	4	TM
QN2AUW	154.2	-0.24	5.4	150.0	-0.69	5.3	4	SC
QW2MZR	169.4	0.20	6.5	161.9	-0.04	5.0	4	TM
TKG6AR	172.8	0.30	6.1	170.1	0.42	6.7	4	TM
YHBRTR	133.8	-0.83	4.8	145.3	-0.95	9.3	4	TM
YPX9UH	119.4	-1.25	9.9	159.6	-0.16	30.1	3	HY

Consensus (All Labs) Results

Month Mean	162.36	Grand Mean	162.55
Avg SDr	10.58	Avg SDr	11.42
SD btwn Labs	34.43	SD btwn Labs	18.18
Labs Incld	19	Labs Incld	17

Comments:

43GWKG - Data appears to be reported in the wrong unit. Data corrected by CTS.

Instrument Code List as Reported by the Labs

(HY) - Huygen Digitized Scott Internal Bond Tester

(SC) - Scott Internal Bond Tester (Manual)

(XX) - Instrument make/model not specified by lab

(LZ) - L & W (model not specified)

(TM) - TMI Monitor/Internal Bond Tester

Report #557

Containerboard Interlaboratory Testing Program

Analysis 234

COF Inclined Plane (Slide Angle), 36 lb Linerboard - 36Z

TAPPI Official Test Method T815

	Monthly Results			Cumulative Results			
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months
78LAFK	26.0	-0.42	3.0	27.8	0.26	1.8	4
7J4UYG	28.8	0.74	1.8	28.5	0.55	3.0	3
ABWLLC	37.2	4.22 X	2.7	36.0	3.93 X	3.2	3
CH7M74	28.4	0.57	0.5	30.8	1.60	0.9	4
CPAGED	26.0	-0.42	2.1	28.6	0.59	3.9	4
GX7TM4	30.0	1.24	2.9	27.8	0.23	3.5	4
KBJM4X	25.2	-0.75	1.4	24.5	-1.22	1.7	4
MHE4TU	25.0	-0.84	1.0	24.5	-1.25	1.1	3
MHVA8X	26.6	-0.17	1.1	24.1	-1.43	1.4	4
MN3QNY	30.4	1.40	2.2	29.2	0.88	2.6	4
NJ2B72	29.0	0.82	1.7	26.8	-0.20	2.8	4
QBGL6T	26.0	-0.42	3.2	28.4	0.50	1.9	4
QN2AUW	29.6	1.07	0.5	29.8	1.12	1.1	4
QW2MZR	31.0	1.65	3.9	29.5	1.01	3.0	4
QWVKXZ	22.8	-1.75	1.9	23.0	-1.91	1.6	4
TKG6AR	25.5	-0.65	1.8	24.3	-1.33	2.5	4
VVRDNV	24.6	-1.00	1.9	27.9	0.28	1.3	4
XMC6MK	29.4	0.99	2.3	28.6	0.61	2.1	2
YHBRTR	27.2	0.08	1.0	28.7	0.63	1.4	4
YPX9UH	25.7	-0.55	1.7	27.4	0.06	1.7	3
ZVF2JM	23.2	-1.58	0.8	25.1	-0.98	1.9	4

Consensus (All Labs) Results

Month Mean	27.02	Grand Mean	27.24
Avg SDr	2.05	Avg SDr	2.23
SD btwn Labs	2.41	SD btwn Labs	2.23
Labs Incld	20	Labs Incld	20

Instrument Code List as Reported by the Labs

(ZZ) - Instruments No Longer Tracked

Report #557

Containerboard Interlaboratory Testing Program

Analysis 237

Air Resistance, 36 lb Linerboard - 36Z

TAPPI Official Test Method T460

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
4ZJ7MH	53.3	0.87	2.1	54.4	1.25	2.0	3	XX
78LAFK	45.4	-3.67 X	3.0	45.9	-2.32 *	2.9	4	XX
7RD9RB	53.0	0.71	1.8	52.4	0.41	1.7	4	XX
ABWLLC	50.8	-0.54	1.8	52.1	0.31	1.8	4	LP
C2GL67	50.5	-0.72	0.7	50.7	-0.29	1.2	2	LP
CH7M74	53.3	0.92	2.4	53.1	0.72	1.8	4	LA
CPAGED	53.6	1.06	3.4	54.9	1.49	2.8	4	GA
GX7TM4	51.9	0.06	1.8	51.7	0.12	1.8	4	LP
K6B8B2	48.9	-1.64	4.1	49.6	-0.74	3.2	4	GG
MHE4TU	51.2	-0.30	1.5	52.7	0.55	1.6	4	LP
MHVA8X	53.6	1.05	2.5	53.0	0.68	2.5	4	TP
MN3QNY	50.2	-0.89	2.1	50.9	-0.22	2.3	4	HG
NJ2B72	40.7	-6.35 X	3.5	46.0	-2.28 *	3.9	4	XX
Q2WGXT	52.0	0.17	2.0	51.5	0.06	1.8	4	LP
QW2MZR	51.6	-0.09	2.2	51.7	0.15	1.7	4	LP
RN68NT	52.7	0.56	1.9	51.2	-0.08	1.9	4	LA
T2KPWM	49.5	-1.30	1.9	49.0	-1.00	3.0	2	LA
TAJ27X	53.4	0.95	1.3	53.0	0.66	1.1	4	XX
TKG6AR	48.7	-1.77	3.3	51.0	-0.17	3.3	4	HG
VVRDNV	41.2	-6.10 X	2.3	41.3	-4.24 X	1.9	4	XX
X4CGVL	54.9	1.82	2.9	54.7	1.40	2.8	4	TL
YHBRTR	51.8	0.03	1.7	51.9	0.23	2.1	4	LA
YPX9UH	50.1	-0.96	1.1	49.2	-0.93	1.4	3	LA

Consensus (All Labs) Results

Month Mean	51.75	Grand Mean	51.38
Avg SDr	2.26	Avg SDr	2.32
SD btwn Labs	1.74	SD btwn Labs	2.37
Labs Incld	20	Labs Incld	22

Instrument Code List as Reported by the Labs

(GA) - Gurley Precision #4340 Automatic Densometer

(GG) - Gurley Precision #4320 Densometer

(HG) - Technidyne - Hagerty Model #1 and Profile System

(LA) - L & W Autoline

(LP) - L & W Air Permeance Tester SE 166

(TL) - Teledyne Gurley Densometer #4110, Oil Flotation

(TP) - Technidyne Profile/ plus Roughness & Porosity

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM81

TAPPI Official Test Method T809

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2UJ8YN	55.3	55.4	57.3	55.3 *	55.8	-2.03 *	2.5	1.0	55.8	-1.47	2.9	1.2	16	LD
43GWKG	60.0	60.4	61.9	60.6	60.7	0.74	1.7	0.8	63.4	1.76	2.9	2.5	12	LC
43KDJF	60.0	61.3	61.4	60.5	60.8	0.79	1.8	0.7	60.7	0.60	1.8	0.7	16	LC
4ZJ7MH	62.0	62.5	61.6	62.1 H	62.1	1.50	3.1	0.4	60.9	0.71	2.9	1.3	12	MB
6XG3ZK	65.4 *	63.2	65.9 X	66.1 X	65.2	3.25 X	3.1	1.3	62.5	1.37	2.8	3.3	16	LC
78LAFK	54.6	60.4	60.2	59.9	58.8	-0.36	2.8	2.8 H	57.8	-0.64	3.4	3.0	8	XX
7RD9RB	60.0	60.1	59.5	59.4	59.8	0.19	2.5	0.4	59.8	0.23	2.4	0.7	16	LD
7TPX8G	58.8	58.7	58.8	58.9	58.8	-0.35	2.6	0.1 L	59.5	0.09	2.6	0.7	16	LD
9A62PE	63.6	58.0	60.0	58.5	60.0	0.33	2.5	2.6	58.9	-0.16	2.7	3.3	15	LZ
9BJMYF	61.3	60.7	60.5	60.6	60.8	0.77	2.1	0.4	61.3	0.88	1.8	2.3	16	LD
9JT2XB	61.1	59.9	60.6	61.0	60.7	0.70	1.9	0.5	61.1	0.77	2.3	0.7	16	LZ
ABWLLC	56.8	57.9	56.9	58.8	57.6	-1.04	2.7	1.0	58.0	-0.53	2.6	0.9	16	LZ
AEJYVF	60.6	60.1	59.7	60.8	60.3	0.50	2.6	0.5	57.7	-0.66	2.5	2.9	16	LC
B7FKXJ	58.2	59.2 H	59.1 H	59.0	58.9	-0.30	4.0	0.5	65.4	2.62 *	3.3	4.4 H	16	LZ
B8UXR9	58.6	59.1	57.8	58.3	58.5	-0.55	2.0	0.5	58.7	-0.23	2.4	0.6	16	LC
CFWJA8	56.8	59.1	59.3	57.4	58.2	-0.71	2.4	1.2	59.2	-0.03	2.7	1.8	16	TH
CH7M74	59.0	60.9 L	60.1	57.2	59.3	-0.08	2.7	1.6	56.3	-1.28	2.5	2.6	16	LD
CHKZJE	59.4	59.2	59.6	60.5 L	59.6	0.13	2.0	0.6	60.0	0.30	2.2	0.5	12	TH
D2BQX6	58.5 H	60.7	62.9	63.3 *	61.4	1.11	4.2	2.2	61.3	0.87	4.1	1.4	16	TG
DRCP6A	56.2	56.9	57.3	56.3 H	56.7	-1.55	3.5	0.5	56.8	-1.06	3.1	0.7	8	LC
F2QKX7	57.2	58.2	56.1	58.1	57.4	-1.12	2.2	1.0	57.4	-0.80	2.3	0.9	16	LD
GX4ENA	61.8	58.7	60.1	59.3	60.0	0.31	2.1	1.4	58.7	-0.27	2.2	1.5	16	MB
GX7TM4	59.6	58.6	60.0	58.9	59.3	-0.08	2.5	0.6	60.2	0.41	2.4	2.1	16	LC
JCB8B3	59.4	58.6	58.6	56.4	58.3	-0.65	2.3	1.3	58.2	-0.48	2.6	2.4	16	LC
JD8NMZ	59.3	59.7	59.5	60.1	59.7	0.14	2.4	0.3	57.9	-0.58	2.5	1.5	16	LD
JVWPPX	58.5	58.6 L	57.7	58.4	58.3	-0.63	1.7	0.4	57.4	-0.79	2.0	1.0	16	EM
MCL863	60.5	62.1	62.0	60.8 L	61.3	1.08	2.1	0.8	61.2	0.84	2.0	1.9	13	LC
MHE4TU	60.6	62.4	60.8	62.0	61.4	1.15	3.6	0.9	60.7	0.61	3.0	1.3	16	LD
MHVA8X	61.4	60.9	63.1	62.8	62.0	1.48	2.9	1.1	59.8	0.22	3.0	2.0	16	LC
N2MTJW	57.8	57.5	57.4	58.1	57.7	-0.97	1.7	0.3	58.8	-0.22	2.1	1.2	16	LD
NBMFBT	62.3	62.4	61.7	60.6	61.7	1.32	2.3	0.8	61.5	0.95	2.5	0.9	16	LD
NKD2GR	58.1	58.3	58.7	58.3	58.4	-0.60	2.5	0.3	57.4	-0.81	2.8	1.0	16	LD
QBGL6T	58.2	58.6	60.0	58.0	58.7	-0.40	2.6	0.9	57.8	-0.62	2.5	1.6	16	LD
QWVKXZ	55.8	54.2 *	57.5	58.9	56.6	-1.60	3.0	2.0	54.6	-2.02 *	3.2	1.8	16	LZ
T2KPWM	62.0 L	60.4	60.4	60.8	60.9	0.83	1.9	0.8	61.9	1.11	2.0	1.4	8	LC

Report #557

Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM81

TAPPI Official Test Method T809

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
TXLDZM	57.6	No Data	55.9 *	57.1	56.8	-1.46	3.8	0.9	55.7	-1.54	3.8	1.9	15	LC
VFE6NR	62.2 L	61.5	70.6 X	61.3	63.9	2.53 *	1.4	4.5 H	63.1	1.64	1.4	2.2	16	TD
VTP9KN	57.6	57.9	58.8	58.2	58.1	-0.73	2.4	0.5	58.7	-0.24	2.4	0.6	16	LD
W6T2GT	59.3	63.2 H	58.9	59.4	60.2	0.43	5.5	2.0	59.2	-0.03	4.9	3.6	12	MB
WNNKFL	59.1	59.1	59.6	59.7	59.4	-0.03	2.0	0.3	58.8	-0.19	2.2	0.9	16	LD
X6M7AR	24.5 XL	24.5 XL	24.0 XL	53.5 X	31.6	-15.74 X	1.3	14.6 H	27.9	-13.44 X	2.6	10.4 H	8	TH
XLGPAN	63.5	60.8	63.3 *	62.3	62.5	1.73	2.6	1.3	61.8	1.09	2.7	0.9	16	EM
XMC6MK	55.4	55.3 *	60.3	56.4	56.9	-1.45	2.1	2.4	54.1	-2.24 *	1.9	11.8 H	16	LZ
XWWK6T	59.6	56.8	60.1	59.0	58.9	-0.30	2.4	1.5	58.9	-0.16	2.4	1.5	4	LZ
Y494WR	60.1	58.9	59.2	57.6	58.9	-0.27	2.4	1.0	57.6	-0.72	2.5	1.1	16	LD
YHBRTR	55.8 H	59.2	58.7	60.4	58.5	-0.50	2.9	2.0	60.9	0.70	3.4	3.1	16	LC

Consensus (All Labs) Results

Wk Mean	59.31	59.44	59.59	59.34	Month Mean	59.41	Grand Mean	59.27
Avg SDr	2.65	2.93	2.54	2.59	Avg SDr	2.68	Avg SDr	2.71
SD btwn Labs	2.38	2.02	1.76	1.83	SD btwn Labs	1.77	SD btwn Labs	2.33
Labs Incld	45	44	43	44	SD btwn Wks	1.36	SD btwn Wks	2.59
Labs Excld	1	1	3	2	Labs Incld	44	Labs Incld	45
Labs not rcvd	0	1	0	0				

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200 Series

(LD) - L&W Crush Tester 248

(MB) - Messmer Buchel K440

(TG) - TMI Compression Tester, Model 17-10

(XX) - Instrument make/model not specified by lab

(LC) - L & W Crush Tester 48

(LZ) - L & W Crush Tester (model not specified)

(TD) - TMI Digital Crush Tester, Model 17-09

(TH) - TMI Compression Tester, Model 17-76

Report #557

Containerboard Interlaboratory Testing Program

Analysis 250

Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium - CM81

TAPPI Official Method T824

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
7RD9RB	71.5	70.6	68.7	68.7	69.9	0.60	2.0	1.4	69.9	0.75	1.9	1.0	8	XX
9A62PE	64.7 H	71.0	71.3	69.6	69.1	0.44	3.2	3.1	68.1	0.37	3.6	2.6	15	LZ
9BJMYF	65.9	64.5	66.1	65.8	65.6	-0.30	1.8	0.7	62.9	-0.73	2.0	1.9	16	LD
9JT2XB	48.8 XH	66.0 H	62.0 H	62.0 H	59.7	-1.54	4.3	7.5 H	59.7	-1.40	4.3	7.5 H	4	XX
CH7M74	69.5	70.6	67.3	70.0	69.3	0.49	1.9	1.5	68.8	0.50	1.9	1.4	16	LD
GX7TM4	66.5	65.1	64.1	63.0	64.7	-0.50	1.9	1.5	64.9	-0.31	1.8	2.3	16	XX
MCL863	63.5	66.8	64.2	65.9	65.1	-0.41	2.4	1.5	65.5	-0.19	2.1	2.0	13	LC
MHVA8X	70.8	71.1	75.3	73.7	72.7	1.20	1.6	2.2	71.0	0.96	2.0	1.8	16	LC
NBMFBT	70.7	70.5	70.3	67.9	69.9	0.60	2.6	1.3	69.7	0.71	2.3	1.0	8	XX
TAJ27X	68.0	68.2	68.4 L	67.7 L	68.1	0.22	1.0	0.3 L	70.7	0.91	1.4	1.7	16	XX
VFE6NR	72.1 L	71.6	71.3	71.6	71.7	0.98	1.1	0.3 L	70.8	0.92	1.2	1.2	16	TD
W6T2GT	56.1 X	55.0 X	56.9 *	56.6 *	56.1	-2.29 *	1.7	0.8	55.5	-2.30 *	1.9	2.8	12	MB
WNNKFL	69.6	68.9	69.4	70.2	69.5	0.53	1.9	0.5	65.4	-0.20	1.9	3.3	16	LD

Consensus (All Labs) Results

Wk Mean	68.44	68.74	67.33	67.14	Month Mean	67.03	Grand Mean	66.38
Avg SDr	2.32	2.10	2.51	2.00	Avg SDr	2.27	Avg SDr	2.34
SD btwn Labs	2.91	2.55	4.75	4.54	SD btwn Labs	4.75	SD btwn Labs	4.75
Labs Incld	11	12	13	13	SD btwn Wks	2.51	SD btwn Wks	2.86
Labs Excld	2	1	0	0	Labs Incld	13	Labs Incld	13
Labs not rcvd	0	0	0	0				

Instrument Code List as Reported by the Labs

(LC) - L & W Crush Tester 48

(LD) - L&W Crush Tester 248

(LZ) - L & W Crush Tester (model not specified)

(MB) - Messmer Buchel K440

(TD) - TMI Digital Crush Tester, Model 17-09

(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - CM81

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
43KDJF	37.1	43.5	37.6	43.6 L	40.4	0.76	1.3	3.6 H	38.6	0.58	1.5	2.3	16	LC
6XG3ZK	27.1 *	27.1 *	24.5 X	27.4 X	26.5	-4.74 X	2.1	1.3	27.2	-2.29 *	2.4	1.2	8	XX
7E9Z2F	35.1	34.6 L	34.9	34.9 L	34.9	-1.43	1.1	0.2 L	35.7	-0.13	1.0	0.8	16	WK
7RD9RB	37.8	36.3	37.2	37.5	37.2	-0.52	2.0	0.6	36.7	0.10	2.1	1.2	16	LD
7TPX8G	37.5	37.3	37.4	37.3	37.4	-0.44	2.1	0.1 L	37.6	0.34	2.2	0.5	16	LD
CH7M74	38.9	39.0	40.4	41.3	39.9	0.54	1.9	1.2	38.8	0.65	1.8	1.1	16	LD
CHKZJE	34.5	35.7	37.5	36.7 L	36.1	-0.95	1.6	1.3	34.6	-0.43	1.4	1.8	12	TH
F2QKX7	41.5	40.0	40.9	40.9 L	40.8	0.91	1.4	0.6	40.4	1.04	1.8	1.2	16	LZ
GX7TM4	41.0	37.9	37.0 H	37.0	38.2	-0.11	3.1	1.9	35.4	-0.21	2.6	2.7	16	LC
JCB8B3	34.9	36.4	35.1	35.2	35.4	-1.24	1.8	0.7	35.2	-0.28	1.6	1.0	16	LC
JD8NMZ	41.7	39.6	42.0	41.2	41.1	1.01	2.2	1.1	40.2	0.99	2.0	1.4	16	LD
JVQLM7	35.3 H	35.2 H	38.3	34.6 H	35.8	-1.07	4.2	1.7	37.1	0.21	3.3	2.1	16	LZ
JVWPPX	38.4	38.1	38.4	38.4	38.3	-0.07	1.3	0.2 L	38.3	0.51	1.5	0.8	16	LC
MHVA8X	37.5	38.9	39.3	39.5	38.8	0.11	2.2	0.9	37.3	0.27	2.1	1.8	16	LC
NBMFBT	40.6	40.2	40.3	40.9	40.5	0.78	1.7	0.3	39.8	0.90	1.9	0.6	16	LD
QWVKXZ	38.4	38.5	37.5	37.3	37.9	-0.23	1.7	0.6	36.8	0.13	1.8	1.6	16	EM
T2KPWM	41.5	42.2	44.3 *	42.3	42.6	1.60	2.0	1.2	40.2	0.99	1.7	2.8	8	LD
W6T2GT	30.0	28.7	29.3 X	31.7	29.9	-3.39 X	2.0	1.3	28.7	-1.92	2.2	1.3	12	MB
W7433R	41.9	43.3	41.8	42.8	42.5	1.56	1.8	0.7	39.0	0.68	2.3	2.6	16	TH
X6M7AR	25.9 *H	25.6 *H	22.1 XH	24.6 XH	24.6	-5.51 X	4.4	1.7	27.2	-2.30 *	3.9	4.0 H	12	TH
XWWK6T	34.0	34.4	34.4	33.1	34.0	-1.78	1.7	0.6	34.0	-0.57	1.7	0.6	4	EM
Y494WR	40.5	39.3	39.3	40.8	40.0	0.58	2.0	0.8	39.2	0.73	1.9	1.6	16	LD

Consensus (All Labs) Results

Wk Mean	36.86	36.90	38.61	37.82	Month Mean	38.52	Grand Mean	36.26
Avg SDr	2.28	2.12	2.03	2.05	Avg SDr	2.06	Avg SDr	2.12
SD btwn Labs	4.54	4.71	2.57	4.07	SD btwn Labs	2.53	SD btwn Labs	3.96
Labs Incld	22	22	19	21	SD btwn Wks	1.23	SD btwn Wks	1.80
Labs Excld	0	0	3	2	Labs Incld	19	Labs Incld	22
Labs not rcvd	0	0	0	0				

Report #557

Containerboard Interlaboratory Testing Program
Analysis 255
Ring Crush (RCT), 26 lb Corrugating Medium - CM81
TAPPI Official Test Method T822

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200 Series
(LD) - L&W Crush Tester 248
(MB) - Messmer Buchel K440
(WK) - Zwick Z005 Crush Tester
(LC) - L & W Crush Tester 48
(LZ) - L & W Crush Tester (model not specified)
(TH) - TMI Compression Tester, Model 17-76
(XX) - Instrument make/model not specified by lab

Report #557

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM81

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
43KDJF	12.5	13.8	13.3	13.7	13.3	0.39	0.6	0.6	13.3	1.18	0.6	0.5	16	XX
4ZJ7MH	14.0 L	13.5 L	14.0 L	14.0 L	13.9	1.21	0.1	0.2	12.4	-0.51	0.1	1.1	12	BK
9JT2XB	12.4	12.5	12.5	12.7	12.5	-0.75	0.8	0.1	12.1	-1.13	0.7	0.4	16	LW
ABWLLC	13.1	12.7	12.6	12.2	12.7	-0.57	0.7	0.4	12.3	-0.78	0.8	0.4	16	LB
B8UXR9	12.7	12.8	12.6	12.6	12.7	-0.59	0.8	0.1	12.8	0.13	0.8	0.2 L	16	LB
CFWJA8	12.7	12.6	12.5	12.7	12.6	-0.64	0.7	0.1 L	12.6	-0.07	0.7	0.7	16	TT
CH7M74	12.4	12.7	13.0	12.8	12.7	-0.48	0.6	0.3	12.3	-0.74	0.6	0.4	16	LA
CHPHHD	13.9	13.8	14.2	14.0	14.0	1.36	0.9	0.2	16.1	6.66 X	0.9	4.4 H	12	TT
GPVQ23	13.7	13.9	13.1	13.4	13.5	0.65	0.9	0.4	13.6	1.71	0.9	2.4 H	16	LA
JD8NMZ	14.4	12.4	13.2	14.0	13.5	0.64	0.9	0.9 H	13.1	0.85	0.8	0.8	16	LZ
JVQLM7	13.0	12.5	13.8	13.8	13.3	0.33	0.7	0.6	13.1	0.89	0.8	0.9	16	LA
JVWPPX	12.5	12.8	12.6	13.4	12.8	-0.32	0.8	0.4	12.1	-1.24	0.7	0.6	16	LB
MHVA8X	12.3	12.1	12.6	12.6	12.4	-0.97	0.8	0.2	12.2	-1.04	0.8	0.3	16	LU
QBGL6T	12.7	12.8	12.1	12.6	12.5	-0.79	0.8	0.3	12.5	-0.40	0.9	0.2	8	LU
QWVKXZ	13.3	13.7	13.3	13.5	13.5	0.59	0.6	0.2	12.4	-0.51	0.6	0.7	16	LZ
T2KPWM	14.6	14.4 *	14.3	14.3	14.4	1.96	0.5	0.1	13.3	1.19	0.6	1.2	8	LA
TXLDZM	14.2	13.0	14.3	14.1	13.9	1.27	1.1	0.6	13.1	0.72	0.9	1.1	16	LW
VTP9KN	12.6	12.7	12.6	12.4	12.6	-0.74	0.9	0.1	12.8	0.15	0.8	0.2	16	LB
WNNKFL	12.9	13.0	12.9	13.2	13.0	-0.10	0.6	0.2	13.4	1.42	0.7	0.9	16	LA
X6M7AR	12.7 L	12.5 L	13.0 L	12.8 L	12.8	-0.41	0.0	0.2	18.3	11.13 X	0.0	5.4 H	16	TS
XMC6MK	11.4 *	11.4 *	11.3 *	11.3 *	11.4	-2.51 *	0.7	0.1 L	11.7	-1.86	0.6	2.2 H	16	LU
Y494WR	12.9	13.4	13.8	13.5	13.4	0.47	0.8	0.4	12.7	0.04	0.7	0.8	16	LA

Consensus (All Labs) Results

Wk Mean	13.03	12.95	13.07	13.16	Month Mean	13.05	Grand Mean	12.69
Avg SDr	0.69	0.81	0.70	0.73	Avg SDr	0.73	Avg SDr	0.72
SD btwn Labs	0.79	0.68	0.76	0.75	SD btwn Labs	0.68	SD btwn Labs	0.51
Labs Incld	22	22	22	22	SD btwn Wks	0.37	SD btwn Wks	0.98
Labs Excld	0	0	0	0	Labs Incld	22	Labs Incld	20
Labs not rcvd	0	0	0	0				

Report #557

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM81

TAPPI Provisional Test Method T826

Instrument Code List as Reported by the Labs

(BK) - Buchel Strip Compression Tester BK-155

(LB) - L & W Model 152

(LW) - L & W 53 with moisture correction (was 53M)

(TS) - TMI Monitor/STFI Compression Tester, 17-33

(XX) - Instrument make/model not specified by lab

(LA) - L & W Autoline

(LU) - L & W 52 without moisture correction (was 53)

(LZ) - L & W (model not specified)

(TT) - TMI Short Span Compression, 17-34 (MB K455)