Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #558 (C) - March 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
206	69C2	Mullen Burst of Linerboard, 69 lb Linerboard
215	42D1	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
216	69C2	Ring Crush of Linerboard, Rigid Platen Type, 69 lb Linerboard
223	42D1	STFI of Linerboard, 42 lb Linerboard
224	69C2	STFI of Linerboard, 69 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.

For further information, contact:
Collaborative Testing Services, Inc
21331 Gentry Drive
Sterling, VA 20166 USA
Voice: 571-434-1925
Fax: 571-434-1937
containerboard@cts-interlab.com

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).

Report #558

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
6WZ9ZT	652.9	-1.13	42.4	666.4	-0.90	53.6	3	LM
77YLCD	741.9	0.46	84.5	754.0	0.33	64.4	3	LL
7F82HK	671.2	-0.81	36.5	697.1	-0.47	61.9	3	EX
8F34KU	717.4	0.02	93.6	698.5	-0.45	60.5	3	LG
9W9MXC	919.2	3.62 X	22.5	891.9	2.26 *	19.3	2	EX
FKAEU2	809.0	1.65	56.1	856.9	1.77	53.2	3	TB
FUVH32	788.2	1.28	28.8	787.8	0.81	29.3	2	TE
H7K2TC	670.2	-0.82	28.9	655.9	-1.04	46.5	3	LL
JYWXYE	663.0	-0.95	42.7	653.4	-1.08	35.0	3	ER
L78YBT	717.4	0.02	29.7	765.2	0.49	57.6	3	ET
L84EL6	710.4	-0.11	58.0	743.3	0.18	50.6	3	LM
PDYFEU	675.3	-0.73	23.7	658.1	-1.01	29.3	2	ER
RWKQDY	673.0	-0.77	18.0	702.0	-0.40	33.4	3	ER
T42LUT	808.8	1.65	61.9	810.0	1.12	47.9	3	LG
UJPJ9T	619.9	-1.72	28.9	643.5	-1.22	32.1	3	LS
WAWMMH	671.6	-0.80	10.5	653.1	-1.08	28.1	3	LS
WPQE6Y	737.8	0.38	37.4	713.6	-0.24	58.1	3	ES
XZ28BJ	772.8	1.01	27.8	772.8	0.59	27.8	1	LS
YH2E3Q	776.2	1.07	12.7	783.8	0.75	16.0	3	ER
ZBDDXX	734.2	0.32	63.1	699.9	-0.43	49.6	3	ER

Consensus (All Labs) Results

Month Mean	716.38	Grand Mean	730.38
Avg SDr	46.95	Avg SDr	45.15
SD btwn Labs	56.00	SD btwn Labs	71.36
Labs Incld	19	Labs Incld	20

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	720.95	95.14	4.58	3
Clip sealing	703.65	41.39	12.73	14
Tape sealing	838.80	70.40	122.42	3

Report #558

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

(LL) - Lansmont 76-5K

(LM) - Lansmont 122-15k

(LS) - Lansmont Squeezer

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

(TE) - Testometric M500 - 25 KN

Report #558

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
3MH98D	31.5	-2.21 X	2.6	31.5	-5.05 X	2.6	1	XX
7GKPJC	44.0	0.38	2.2	44.0	0.50	2.2	1	XX
8F34KU	45.2	0.62	1.4	45.6	1.20	1.5	2	WK
CN2EK8	39.3	-0.59	1.5	39.0	-1.72	1.2	2	WK
PDYFEU	44.7	0.51	1.4	44.7	0.78	1.4	1	EN
UJPJ9T	44.0	0.37	1.3	43.6	0.31	1.6	2	LC
WAWMMH	46.7	0.93	1.0	41.3	-0.72	2.0	2	EM
XZ28BJ	42.1	-0.01	2.1	42.1	-0.35	2.1	1	EM

Consensus (All Labs) Results

Month Mean	42.18	Grand Mean	42.90
Avg SDr	1.77	Avg SDr	1.75
SD btwn Labs	4.85	SD btwn Labs	2.26
Labs Incld	8	Labs Incld	7

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200 Series

(EN) - Emerson 2200

(LC) - L&W Crush Tester 48

(WK) - Zwick Z005 Crush Tester

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

Report #558

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
38QB6H	51.6	1.88	1.6	50.5	1.77	1.6	2	LC
3MH98D	31.8	-4.96 X	2.5	31.8	-5.88 X	2.5	1	XX
4E2WRR	48.3	0.76	1.2	47.0	0.33	1.3	2	LD
62U7PJ	45.4	-0.25	1.7	44.1	-0.84	2.4	2	LD
6WZ9ZT	47.0	0.32	1.3	47.5	0.53	1.6	2	EM
6ZYMNH	40.0	-2.13 *	3.3	42.4	-1.55	3.0	2	LC
77YLCD	46.1	0.00	0.8	49.3	1.26	1.4	2	BU
7F82HK	44.7	-0.49	1.2	45.1	-0.44	1.2	2	LD
8F34KU	47.6	0.52	1.1	45.5	-0.26	1.7	2	LE
8L8Z7F	45.3	-0.28	2.0	46.2	0.03	2.2	2	TK
9LQ3DF	45.4	-0.24	1.5	45.5	-0.27	1.5	2	TG
9W9MXC	47.7	0.56	2.6	46.6	0.19	2.6	2	CT
ADBJUG	47.2	0.36	1.7	39.6	-2.67 *	1.7	2	LC
FKAEU2	52.2	2.11 *	0.9	50.3	1.68	0.8	2	LC
FUGWTZ	47.6	0.53	2.1	48.0	0.76	1.6	2	EM
GLKGGZ	44.4	-0.59	1.3	44.5	-0.70	1.2	2	TB
H7K2TC	48.1	0.69	3.3	49.0	1.17	2.5	2	LC
HPWNG6	47.8	0.59	0.9	47.8	0.67	0.9	1	LC
JYWXYE	48.4	0.79	2.0	47.7	0.61	2.0	2	LD
L78YBT	51.9	1.99	1.7	50.3	1.67	1.9	2	TD
L84EL6	47.0	0.30	1.3	48.8	1.06	1.3	2	TG
MQVKRB	45.4	-0.23	2.0	45.4	-0.30	2.0	1	LD
N3H93Z	42.1	-1.40	1.8	35.3	-4.46 X	1.8	2	TD
PDYFEU	45.7	-0.13	2.5	45.7	-0.18	2.5	1	EN
QTQDFP	47.1	0.35	1.6	47.1	0.37	1.4	2	LD
RCX37R	44.8	-0.47	0.8	44.6	-0.63	0.7	2	LC
RL48U3	42.5	-1.26	1.5	43.8	-0.98	1.6	2	LD
RWKQDY	43.4	-0.95	1.5	44.1	-0.83	1.7	2	TB
T42LUT	45.7	-0.13	3.0	46.0	-0.08	2.5	2	EM
UJPJ9T	46.7	0.20	0.9	46.6	0.17	1.4	2	LC
WAWMMH	38.5	-2.62 *	1.9	42.3	-1.57	1.8	2	EM
WPQE6Y	47.6	0.52	1.9	47.2	0.42	1.7	2	LD
XZ28BJ	45.5	-0.22	1.2	45.5	-0.29	1.2	1	EM
YH2E3Q	42.0	-1.41	0.9	42.8	-1.38	0.9	2	EM
Z96XQR	46.0	-0.04	0.3	46.0	-0.07	0.3	1	TM
ZAGXML	45.3	-0.26	2.4	46.0	-0.05	2.0	2	LC

Report #558

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
ZBDDXX	44.1	-0.68	2.3	45.0	-0.49	2.0	2	EN
ZJRZ9M	50.1	1.40	1.4	50.1	1.59	1.2	2	LC
ZKMHBN	45.9	-0.08	0.9	44.5	-0.69	1.2	2	EX

Consensus (All Labs) Results

Month Mean	46.11	Grand Mean	46.17
Avg SDr	1.78	Avg SDr	1.74
SD btwn Labs	2.89	SD btwn Labs	2.45
Labs Incld	38	Labs Incld	37

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

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

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

(TK) - TLS Compression Tester, Model 5184

(TM) - TMI/Hinde & Dausch

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

Report #558

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
2AVJWN	110.8	106.0	110.0	109.4 L	109.0	-0.14	6.4	2.1	110.0	0.04	5.3	1.9	16	LA
2VFHZX	107.7	115.3 H	122.7 *	111.6	114.3	1.19	12.4	6.4	109.4	-0.19	11.8	5.0	15	TB
46EX2L	106.0	109.4	111.6	115.4	110.6	0.25	13.0	3.9	109.7	-0.07	11.9	3.4	16	LA
4FWFTT	111.0	97.8 X	100.7	100.3 *	102.5	-1.81	8.9	5.8	109.9	-0.02	10.2	6.2	16	LC
62U7PJ	118.8	114.3	111.6	109.5	113.6	1.00	9.7	4.0	112.1	0.76	9.1	3.1	16	AA
6CR73N	109.4	101.5 *	103.0	106.6	105.1	-1.13	11.7	3.6	106.4	-1.22	11.7	3.1	16	LC
6PHZCW	115.4	114.7	117.1	112.2	114.8	1.33	10.7	2.1	113.6	1.29	9.6	2.8	16	LC
6WZ9ZT	104.8	109.6	104.7	105.7	106.2	-0.86	10.0	2.3	106.9	-1.07	10.7	2.5	16	AH
7F82HK	109.5	No Data	111.0	109.0	109.8	0.06	13.2	1.0	113.3	1.17	10.4	6.8 H	8	AH
7VYVRQ	106.3	103.6	104.3	105.0	104.8	-1.22	9.6	1.1	105.3	-1.63	10.9	1.6	12	LA
88BK7L	108.1	109.6	102.9	107.6	107.1	-0.64	10.0	2.9	107.5	-0.87	10.9	2.3	16	LC
8F34KU	116.9	117.0	117.4 H	112.1	115.8	1.59	15.0	2.5	114.2	1.50	12.3	2.3	14	LZ
8M4FGR	106.0	106.0	111.2	111.6	108.7	-0.23	9.9	3.1	108.3	-0.58	7.7	1.7	16	LA
9W9MXC	113.6	112.7	113.3 H	118.1 *H	114.4	1.23	17.3	2.5	114.4	1.55	14.5	2.9	16	XX
ADBJUG	109.0	108.0	111.2	116.4	111.2	0.40	11.7	3.7	109.5	-0.14	11.1	3.5	16	LA
ANC8LD	106.1	118.3 *	114.2	110.8	112.4	0.71	9.6	5.2	112.4	0.86	9.6	5.2	4	LJ
B9QEBC	109.4	109.4	109.4 L	109.3	109.4	-0.06	5.8	0.0 L	109.5	-0.14	6.3	0.1 L	16	LJ
CBU73P	110.4	108.0	109.5	109.3	109.3	-0.07	10.6	1.0	108.5	-0.49	10.1	2.2	16	LB
GEGH6B	110.7	110.2	110.8	113.0	111.2	0.40	12.5	1.3	111.0	0.39	12.6	2.8	16	LZ
H8TEBD	105.6	110.4	109.7	110.1	109.0	-0.16	10.5	2.3	109.8	-0.05	11.1	3.7	16	LA
HY2VW6	81.5 XL	111.9	111.8	110.3	103.9	-1.45	11.4	14.9 H	108.5	-0.50	11.6	7.8 H	16	LJ
JGZ967	114.4	113.8	116.1	114.3	114.6	1.28	11.2	1.0	112.3	0.83	11.2	2.2	16	LC
JYWXYE	110.5	112.8	108.4	106.1	109.5	-0.03	9.9	2.9	113.0	1.08	10.9	5.1	16	AH
KC47GW	112.0	108.7	105.2	110.6	109.1	-0.12	8.6	2.9	109.1	-0.30	8.1	2.1	16	AH
KFZUX4	120.0 *	117.5	117.6	110.2	116.3	1.71	13.2	4.2	113.8	1.36	11.3	4.1	16	LC
KX2FXD	109.3	107.8	106.1	105.1	107.1	-0.63	9.8	1.9	109.1	-0.29	11.3	4.6	15	LZ
LQGYH9	112.7	114.6	111.5	No Data	112.9	0.84	10.9	1.5	111.5	0.55	11.7	2.1	15	TB
LYRZ4A	112.4	107.3	109.6	107.8	109.3	-0.08	9.3	2.3	108.9	-0.34	10.6	3.4	16	LC
MCEPEY	103.2	104.0	109.4	101.1	104.4	-1.31	13.0	3.5	105.9	-1.40	12.3	3.8	12	XX
MQVKRB	107.9	104.8	104.1	107.3	106.0	-0.90	12.0	1.8	105.4	-1.57	10.1	1.8	16	LA
NGKH7A	110.6	108.6	107.4	108.3	108.7	-0.22	11.1	1.4	107.2	-0.96	10.8	1.9	8	AX
NUBE88	108.7	107.2	104.5	105.1	106.4	-0.81	11.1	1.9	105.9	-1.42	10.1	2.6	16	AH
NXBHYU	111.7	112.0	110.3	109.6	110.9	0.33	7.2	1.1	111.4	0.51	9.5	2.5	16	TP
PVZ46T	117.4	No Data	No Data	No Data	117.4	1.99	10.8	0.0 L	107.0	-1.03	9.6	7.9 H	13	LC
QM4MTU	114.8	111.4 L	113.5	113.9 L	113.4	0.97	4.4	1.4	112.6	0.94	4.9	1.8	16	XX

Report #558

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
QTQDFP	119.8 *	110.8	110.3	109.6	112.6	0.77	7.5	4.8	112.6	0.94	7.5	4.8	4	LA
RL48U3	110.1	108.1	113.5	110.1	110.4	0.22	11.4	2.2	110.7	0.28	11.1	3.4	16	LC
RWKQDY	104.8	106.3	101.8	107.1	105.0	-1.16	10.0	2.3	106.8	-1.11	11.2	3.1	16	LA
TMBL29	112.5	109.6	106.0	107.5	108.9	-0.17	12.1	2.8	109.2	-0.26	11.4	3.3	16	LA
TMURZY	108.0	104.4	108.4	110.4	107.8	-0.45	12.4	2.5	109.8	-0.05	11.3	2.6	16	AH
UJPJ9T	108.6	106.8	105.2	110.4	107.8	-0.46	11.5	2.2	106.4	-1.23	10.3	3.1	16	AH
UR46HX	106.6 L	109.8 L	112.9	111.4	110.2	0.15	5.2	2.7	114.2	1.51	4.9	5.4	8	LA
UTBKP4	99.7 *	108.2	103.5	105.9	104.3	-1.33	9.8	3.6	109.6	-0.13	11.9	5.8	16	LA
VTVNW4	110.4	115.9	111.8	114.2	113.1	0.88	11.8	2.4	116.7	2.38 *	11.9	5.3	16	LA
VYGGBN	113.0	107.8 L	109.0	112.8	110.7	0.27	5.7	2.6	108.2	-0.61	5.6	3.1	16	RE
WAWMMH	104.9	95.9 X	96.6 *	98.3 *	99.0	-2.69 *	9.0	4.1	111.6	0.58	11.1	8.8 H	16	RE
WBT4WU	115.3	113.8	113.1	110.4	113.1	0.90	9.2	2.1	111.7	0.63	9.3	2.4	16	LC
WPQE6Y	112.5	112.0	109.6	116.6	112.7	0.78	11.8	2.9	110.1	0.07	11.7	3.1	16	LA
XFUYTY	107.6	109.5	101.1	102.0	105.1	-1.15	7.6	4.1	105.4	-1.60	8.1	3.1	16	TB
XTJYMM	112.5	102.9	100.4	104.9	105.2	-1.12	7.6	5.2	105.7	-1.49	7.8	3.5	16	AX
YJ9UAW	115.7	112.9	No Data	113.8	114.1	1.15	10.3	1.5	114.3	1.53	11.2	2.0	15	LA

Consensus (All Labs) Results

Wk Mean	110.46	109.89	109.08	109.35	Month Mean	109.58	Grand Mean	109.92
Avg SDr	10.01	10.63	10.65	11.06	Avg SDr	10.57	Avg SDr	10.36
SD btwn Labs	4.32	3.96	5.14	4.16	SD btwn Labs	3.95	SD btwn Labs	2.85
Labs Incld	50	47	49	49	SD btwn Wks	3.66	SD btwn Wks	3.94
Labs Excld	1	2	0	0	Labs Incld	51	Labs Incld	51
Labs not rcvd	0	2	2	2				

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 #558

Containerboard Interlaboratory Testing Program

Analysis 206

Bursting Strength (Mullen), 69 lb Linerboard - 69C2

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
2AVJWN	160.6	164.3	174.2 XL	163.7	165.7	2.53 *	6.8	5.9	163.0	2.02 *	8.5	4.9	12	LA
2VFHZX	153.0	150.7	152.6 L	154.0	152.6	-0.81	10.7	1.4	154.4	-0.34	11.3	2.1	10	TB
46EX2L	157.4	156.0	152.8	159.3	156.4	0.16	11.9	2.7	155.4	-0.05	10.8	2.8	12	LA
4FWFTT	155.0	155.5	150.5	146.3	151.8	-1.00	8.4	4.3	151.4	-1.14	10.4	3.6	8	LC
62U7PJ	168.6 *	157.6	154.7	158.2	159.8	1.02	11.0	6.1	157.2	0.42	11.3	5.3	12	AA
6CR73N	148.4	155.7	156.7 H	155.2	154.0	-0.44	12.5	3.8	154.7	-0.24	12.1	3.9	12	LC
6PHZCW	157.9	161.8	155.0	157.7	158.1	0.59	13.9	2.8	157.8	0.59	11.3	3.4	12	LC
6WZ9ZT	153.6	158.6	149.8	153.3	153.8	-0.49	10.3	3.6	154.3	-0.35	9.8	2.9	12	AH
7F82HK	164.0	No Data	155.5	165.5	161.7	1.50	12.1	5.4	183.9	7.71 X	183.6	53.7 H	5	XX
7VYVRQ	152.1	152.4	152.4	147.7	151.1	-1.17	11.8	2.3	154.0	-0.45	11.0	3.6	12	LA
88BK7L	154.6	148.2	148.6	154.6	151.5	-1.08	10.6	3.6	152.8	-0.78	12.2	3.3	12	LC
8F34KU	155.0	157.7	153.5	157.7	156.0	0.06	11.8	2.1	158.8	0.88	11.0	4.1	11	LZ
8M4FGR	162.5	159.9	156.8	155.4	158.7	0.74	12.4	3.2	157.6	0.53	10.9	2.6	12	LA
9W9MXC	161.1	163.3	158.6	161.0	161.0	1.33	12.5	1.9	162.0	1.75	13.3	4.1	11	XX
ADBJUG	162.2	154.3	158.5	158.4	158.3	0.66	10.6	3.2	155.3	-0.10	9.8	4.0	12	LA
ANC8LD	151.5	160.4	No Data	No Data	156.0	0.05	14.7	6.3	153.5	-0.58	12.7	4.8	6	LJ
B9QEBC	155.4	155.3	155.4	155.5	155.4	-0.09	9.7	0.1 L	155.5	-0.04	9.2	0.2 L	12	LJ
CBU73P	154.8	155.7	155.6	154.7	155.2	-0.14	9.4	0.5 L	159.5	1.07	9.9	4.3	12	LB
GEGH6B	158.7	156.3	161.0	157.3	158.3	0.64	11.5	2.0	157.1	0.40	11.8	2.4	12	LZ
H8TEBD	159.1	158.0	162.2	152.3	157.9	0.55	11.2	4.1	156.1	0.13	10.8	3.3	12	LA
HY2VW6	168.8 *	155.8	149.4	155.0	157.3	0.38	12.7	8.2	155.8	0.05	12.3	5.1	12	LJ
JGZ967	157.0	164.2	154.2	151.6	156.7	0.25	11.6	5.4	156.3	0.20	12.2	3.8	12	XX
JYWXYE	148.7	148.8	156.2	150.9	151.2	-1.17	10.2	3.5	159.1	0.95	10.2	8.4 H	12	AH
KC47GW	153.9	152.1	151.8	150.0	152.0	-0.96	8.5	1.6	152.4	-0.87	8.7	2.6	12	AH
KFZUX4	169.8 *	163.1	153.8 H	154.6	160.3	1.16	15.5	7.6	160.2	1.24	13.0	4.5	12	LC
KX2FXD	144.6 *	146.4 *	144.8 *	145.0	145.2	-2.68 *	11.8	0.8	148.8	-1.87	12.3	3.7	11	LZ
LQGYH9	166.3	151.9	155.5	No Data	157.9	0.54	9.6	7.5	156.8	0.32	11.3	5.1	11	TB
LYRZ4A	156.9	155.7	158.1	145.1	154.0	-0.45	13.1	6.0	152.6	-0.83	11.6	4.6	12	LC
MCEPEY	153.7	151.1	158.4	157.1	155.1	-0.17	11.0	3.3	150.5	-1.39	11.2	5.4	8	XX
MQVKRB	155.1	154.3	149.2	151.4	152.5	-0.83	7.2	2.7	152.8	-0.78	7.8	2.1	12	LA
NGKH7A	156.5	154.8	156.9	159.5	156.9	0.29	10.0	1.9	157.3	0.45	11.9	1.8	8	AX
NUBE88	147.7	154.2	159.9	151.3	153.3	-0.63	12.5	5.2	152.0	-1.00	11.5	4.0	12	AH
NXBHYU	155.7 L	155.1	158.6	156.0	156.4	0.15	8.9	1.5	150.6	-1.37	8.5	5.5	12	TP
PVZ46T	150.6	No Data	No Data	No Data	150.6	-1.30	13.8	0.0 L	149.9	-1.55	11.5	4.0	9	LC
QM4MTU	159.0	153.0	149.0	155.2	154.1	-0.43	8.2	4.2	155.4	-0.06	7.2	5.0	12	XX

Report #558

Containerboard Interlaboratory Testing Program

Analysis 206

Bursting Strength (Mullen), 69 lb Linerboard - 69C2

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
QTQDFP	151.8	152.6	148.4	151.0	151.0	-1.22	10.4	1.8	151.0	-1.27	10.4	1.8	4	LA
RL48U3	154.8	157.7	150.5	155.6	154.6	-0.28	11.2	3.0	154.7	-0.26	11.4	3.1	12	LC
RWKQDY	159.7	162.0	155.8	161.0	159.6	0.98	12.4	2.7	156.9	0.34	11.2	4.2	12	LA
TMBL29	159.7	156.1	149.4	160.2	156.4	0.15	11.0	5.0	155.5	-0.02	11.9	4.9	12	LA
TMURZY	154.0	150.4	155.6	145.6	151.4	-1.10	9.0	4.4	148.6	-1.90	11.0	10.0 H	12	AH
UJPJ9T	152.7	151.8	145.2 *	154.6	151.1	-1.19	13.0	4.1	153.6	-0.54	12.3	4.0	12	AH
UR46HX	165.2	163.3	157.1	165.1	162.7	1.76	9.7	3.8	162.7	1.92	9.7	3.8	4	LA
UTBKP4	152.4	147.5	147.8	160.4	152.0	-0.95	11.4	6.0	156.9	0.34	13.3	5.6	12	LA
VTVNW4	162.2	158.0	162.0	167.2 *	162.4	1.68	10.8	3.8	165.5	2.70 *	11.8	4.2	12	LA
VYGGBN	157.4	156.0	154.0	154.2	155.4	-0.09	8.8	1.6	154.1	-0.41	9.8	2.3	12	RE
WAWMMH	134.5 XL	133.1 X	134.6 X	140.1 *	135.6	-5.12 X	10.1	3.1	139.3	-4.46 X	10.8	4.5	12	LA
WBT4WU	161.7	158.3	151.9	162.6	158.6	0.73	11.3	4.9	157.6	0.55	10.3	3.6	8	LC
WPQE6Y	159.7	160.5	162.8	159.9	160.7	1.26	11.4	1.4	157.7	0.56	10.0	4.5	12	LA
XFUYTY	161.9	161.2	155.9	150.8	157.5	0.43	12.8	5.2	159.3	1.00	11.4	4.5	12	TB
XTJYMM	144.7 *	135.4 X	139.9 X	140.7 *	140.2	-3.95 X	10.3	3.8	142.4	-3.59 X	10.1	3.6	12	AX
YJ9UAW	155.6	149.9	No Data	150.6	152.1	-0.94	12.1	3.1	154.6	-0.26	11.6	5.0	11	LA

Consensus (All Labs) Results

Wk Mean	156.86	155.90	154.28	154.79	Month Mean	155.75	Grand Mean	155.61
Avg SDr	11.24	11.45	10.95	11.01	Avg SDr	11.24	Avg SDr	11.03
SD btwn Labs	5.75	4.58	4.40	6.05	SD btwn Labs	3.94	SD btwn Labs	3.67
Labs Incld	50	47	45	48	SD btwn Wks	4.12	SD btwn Wks	4.31
Labs Excld	1	2	3	0	Labs Incld	49	Labs Incld	48
Labs not rcvd	0	2	3	3				

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 #558

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
2AVJWN	89.1	88.4	88.3	88.4	88.6	0.24	2.3	0.4 L	87.7	0.03	2.3	1.6	16	LZ
2VFHZX	83.3	84.0	64.1 XL	78.1	77.4	-1.93	3.2	9.2 H	81.4	-1.44	3.4	5.4	15	LZ
3MH98D	57.4 XL	57.8 XL	59.6 XL	60.3 XL	58.8	-5.54 X	1.3	1.4	58.8	-6.71 X	1.3	1.4	4	XX
3PTV6R	83.3	85.0	82.8	83.2	83.6	-0.73	3.9	1.0	83.5	-0.96	4.0	1.3	16	LD
4FWFTT	86.9	86.0	85.1	84.0	85.5	-0.36	3.8	1.2	85.0	-0.59	3.8	2.1	16	LC
62U7PJ	84.5	84.7	88.4	86.6 L	86.1	-0.25	2.3	1.8	85.3	-0.54	3.0	1.5	16	LD
677GFT	75.8 *	77.9	81.3 H	80.8 H	79.0	-1.62	7.3	2.6	78.2	-2.18 *	7.5	2.3	12	MB
6CR73N	89.9	88.4	87.4	85.9	87.9	0.11	4.9	1.7	87.2	-0.08	4.0	1.3	16	LD
6WZ9ZT	86.6	86.5	91.5	88.8	88.3	0.19	4.2	2.3	89.2	0.38	3.8	2.8	16	EM
7VYVRQ	83.5	83.0	80.3	84.9	82.9	-0.86	3.5	1.9	83.5	-0.96	3.6	1.8	12	LD
8F34KU	85.2	88.4	88.9	88.6	87.7	0.08	4.1	1.7	87.6	0.01	3.5	1.2	14	LC
8L8Z7F	66.2 XH	78.8	81.4	75.3 *	75.4	-2.31 *	5.8	6.6	73.2	-3.35 X	4.9	4.5	12	MB
8M4FGR	82.4	82.4	83.9	83.9	83.2	-0.81	3.3	0.8	83.9	-0.86	2.9	1.1	16	LD
98UQ6C	84.4 H	91.4 H	88.5	88.6	88.2	0.17	6.1	2.9	91.3	0.88	5.2	5.3	12	MB
9LQ3DF	89.0	88.0 L	88.7	87.9	88.4	0.20	3.1	0.5 L	87.0	-0.14	3.1	2.0	16	TH
9X47ZE	88.3	88.0	89.9	90.4	89.1	0.35	4.6	1.2	88.6	0.25	4.4	1.4	12	EM
ABY4ZF	90.3 H	93.1	No Data	No Data	91.7	0.85	5.7	2.0	89.8	0.50	4.7	2.1	6	EX
ADBJUG	99.4 *	97.7 *	96.2	98.3 *	97.9	2.05 *	4.8	1.3	88.4	0.20	4.9	6.3 H	16	LC
ANC8LD	81.3	86.5	83.7 L	85.1	84.2	-0.62	2.6	2.2	84.2	-0.80	2.6	2.2	4	LD
B9QEBC	88.2	88.3	88.4	88.3	88.3	0.18	3.1	0.1 L	86.9	-0.16	4.1	0.8	16	LD
CBU73P	85.8	85.3	88.9	90.0	87.5	0.03	3.7	2.3	88.0	0.09	4.5	2.5	16	LC
CK3ZWH	90.0	91.3	88.6	89.7	89.9	0.50	3.9	1.1	89.1	0.35	3.6	1.8	16	LD
E4RYDZ	86.5	85.0	86.5 L	87.7 L	86.4	-0.18	2.3	1.1	86.3	-0.29	2.6	0.8	8	WK
F847DJ	82.0	84.2	85.8	84.5	84.1	-0.62	3.8	1.6	84.7	-0.68	2.9	1.0	16	LD
FAAR36	69.8 X	82.9	78.8	85.8	79.3	-1.55	4.2	7.0	83.6	-0.93	4.6	6.0 H	12	LC
FUVH32	88.6	86.7	89.8	86.6	87.9	0.12	2.8	1.6	87.9	0.08	3.2	1.9	8	LD
H8TEBD	90.7	100.1 *	99.9 *	93.1	96.0	1.67	3.7	4.8	94.6	1.63	4.1	2.8	16	LD
HY2VW6	111.1 XH	77.7 *	76.8 *	77.8	85.8	-0.29	7.9	16.8 H	84.7	-0.66	4.7	8.2 H	16	LC
JYWXYE	88.7	86.9	85.2	85.9	86.7	-0.13	4.2	1.5	85.9	-0.39	3.7	1.6	16	LD
KX2FXD	76.2 *	87.0	89.5	88.5	85.3	-0.39	4.8	6.2	80.6	-1.62	4.4	4.8	16	LC
LQGYH9	87.7	84.5	82.6	No Data	84.9	-0.47	4.4	2.6	87.3	-0.07	4.2	2.1	15	LC
LYRZ4A	90.6	91.2	92.2	99.0 *	93.3	1.15	4.2	3.9	92.6	1.16	3.7	2.7	16	LC
MCEPEY	86.6	85.1	87.3	85.4	86.1	-0.24	3.6	1.0	86.2	-0.32	4.3	2.3	12	LC
MQVKRB	91.1	89.6	89.5	87.8	89.5	0.42	3.7	1.3	90.1	0.58	3.3	1.3	16	LD
N3H93Z	92.4 L	93.3	90.7 L	91.7 L	92.0	0.91	1.5	1.1	92.3	1.09	1.5	1.5	16	TD

Report #558

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
NGKH7A	78.5 H	70.5 XH	75.0 *H	84.7	77.2	-1.97	8.1	6.0	80.4	-1.67	7.1	6.0 H	8	LC
NXBHYU	88.7	85.6	87.6	87.1	87.2	-0.02	3.4	1.3	87.2	-0.08	3.7	1.1	16	TH
PVZ46T	93.4	No Data	No Data	No Data	93.4	1.17	4.7	0.0 L	92.7	1.20	4.0	4.7	13	LD
QM4MTU	88.4	90.0	95.8	84.0	89.6	0.43	4.3	4.9	91.7	0.97	4.0	4.6	16	LD
QTQDFP	88.0	91.2	91.9	92.6	90.9	0.70	3.7	2.0	90.9	0.78	3.7	2.0	4	LD
RL48U3	90.2	92.1	86.7	89.6	89.7	0.45	3.5	2.2	89.5	0.44	3.8	2.3	16	LD
RWKQDY	76.5 *H	78.6	74.0 *H	72.6 X	75.4	-2.31 *	7.3	2.6	79.6	-1.86	6.0	5.5	12	LZ
T42LUT	81.2	84.3	83.6	83.9	83.3	-0.79	3.3	1.4	83.0	-1.08	4.0	4.6	16	EM
TMBL29	90.4	86.9	87.0	89.1 L	88.4	0.20	2.7	1.7	88.5	0.22	3.3	2.4	16	LC
TMURZY	90.8	91.8	91.7	94.8	92.3	0.96	4.4	1.7	91.2	0.84	4.6	3.6	16	LC
UJPJ9T	86.7	89.7	88.9	87.9	88.3	0.18	4.4	1.3	87.5	-0.03	4.0	1.7	16	LC
UR46HX	93.7	92.0	90.9	89.8	91.6	0.83	4.0	1.7	91.8	0.98	4.1	2.5	8	LD
UTBKP4	89.7	82.0 H	89.3	124.2 X	96.3	1.74	6.0	18.9 H	93.7	1.43	5.3	14.7 H	16	LC
VTVNW4	89.9	93.7	91.4	90.1	91.3	0.76	4.0	1.7	89.2	0.38	4.2	2.5	16	LZ
VYGGBN	90.3	90.9	90.0	92.1	90.8	0.68	3.5	0.9	95.0	1.74	3.9	3.9	16	LZ
WAWMMH	84.0	83.6	87.1	81.8	84.1	-0.62	4.2	2.2	84.2	-0.78	3.9	1.5	16	EM
WBT4WU	87.3	88.2	93.5	92.7	90.4	0.60	3.8	3.1	93.7	1.43	3.7	3.3	16	TC
XFUYTY	93.1 L	95.3	95.9	94.1	94.6	1.41	3.3	1.2	94.5	1.60	4.6	1.6	16	LX
XTJYMM	100.8 *	92.8	93.6	98.3 *	96.4	1.75	4.4	3.8	97.3	2.26 *	4.7	2.9	16	LZ
YH2E3Q	80.4 L	81.9	80.5	80.7 L	80.9	-1.25	2.1	0.7 L	81.9	-1.33	2.3	1.2	16	EX
ZBDDXX	84.4	82.6	83.8	82.9	83.4	-0.76	4.1	0.8 L	83.3	-0.99	3.8	2.0	16	EN

Consensus (All Labs) Results

Wk Mean	87.20	87.37	87.40	87.53	Month Mean	87.33	Grand Mean	87.58
Avg SDr	4.22	4.12	4.05	4.18	Avg SDr	4.33	Avg SDr	4.10
SD btwn Labs	5.06	4.80	5.28	4.98	SD btwn Labs	5.15	SD btwn Labs	4.30
Labs Incld	52	53	52	50	SD btwn Wks	4.51	SD btwn Wks	3.73
Labs Excld	4	2	2	3	Labs Incld	55	Labs Incld	54
Labs not rcvd	0	1	2	3				

Report #558

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)

(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

(WK) - Zwick Z005 Crush Tester

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

Report #558

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 69 lb Linerboard - 69C2

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
2AVJWN	128.1	131.7	128.4	131.6	130.0	-0.18	4.3	2.0	130.8	-0.02	3.3	1.2	12	LZ
2VFHZX	125.7	129.3	102.8 X	125.1 L	120.7	-1.19	3.9	12.1 H	126.8	-0.50	4.3	10.3 H	10	LZ
3MH98D	85.9 XL	86.4 XL	86.9 XL	87.2 XL	86.6	-4.88 X	1.6	0.6 L	86.6	-5.40 X	1.6	0.6 L	4	XX
3PTV6R	118.5	117.3	118.6	119.7	118.5	-1.42	4.1	1.0	118.8	-1.47	3.9	1.4	12	LD
4FWFTT	136.2	134.4	132.1	129.9	133.2	0.16	3.3	2.7	129.5	-0.17	3.5	4.5	8	LC
62U7PJ	123.0	119.8	122.5	120.7	121.5	-1.10	2.8	1.5	121.3	-1.17	3.1	1.2	12	LD
677GFT	119.0 H	120.2	118.7	124.1 H	120.5	-1.21	8.3	2.5	130.2	-0.08	8.3	10.6 H	8	MB
6CR73N	135.2	134.0 L	132.9	132.9 L	133.8	0.23	2.9	1.1	133.9	0.37	3.3	2.7	12	LD
6WZ9ZT	121.9	123.6	126.9	124.0	124.1	-0.82	3.7	2.1	124.8	-0.74	3.8	2.0	12	EM
7VYVRQ	128.1	126.1	128.4	127.1	127.4	-0.46	2.9	1.1	127.0	-0.47	3.7	1.4	12	LD
8F34KU	125.0	136.6	133.0	127.8 L	130.6	-0.11	3.1	5.2	129.9	-0.12	2.9	4.4	11	LY
8L8Z7F	109.7 *	114.5	112.5 *	108.0 *	111.2	-2.22 *	5.3	2.9	115.3	-1.90	5.5	5.1	8	MB
8M4FGR	119.6	123.3	126.1	124.0	123.2	-0.91	3.5	2.7	124.2	-0.81	3.4	1.7	12	LD
98UQ6C	145.4	143.3	136.8	145.0	142.6	1.19	4.6	4.0	140.8	1.21	6.4	5.6	12	MB
9LQ3DF	127.0	127.9	126.4	126.2	126.9	-0.52	4.5	0.7	129.5	-0.17	3.8	2.8	12	TH
9X47ZE	137.1	140.4	136.3	138.0	137.9	0.68	3.5	1.8	133.0	0.26	4.2	5.6	8	EM
ABY4ZF	147.9	149.9	No Data	No Data	148.9	1.87	4.9	1.4	148.9	2.20 *	4.9	1.4	2	EX
ADBJUG	153.7 *	147.7	149.7	146.6	149.4	1.93	4.5	3.1	134.6	0.45	4.5	11.6 H	12	LC
ANC8LD	123.7	135.8 H	132.6 H	131.7	131.0	-0.07	7.0	5.1	134.1	0.40	6.3	5.0	8	LD
B9QEBC	132.5	132.7	132.7	132.6	132.6	0.11	4.3	0.1 L	132.9	0.25	3.5	0.2 L	12	LD
CBU73P	137.6	136.7	137.5	136.7	137.1	0.59	4.3	0.5 L	137.5	0.80	4.2	2.4	12	LC
CK3ZWH	126.0	129.4	129.3	129.5	128.5	-0.34	3.4	1.7	127.3	-0.44	3.8	2.1	12	LD
E4RYDZ	126.3	126.8	126.8	125.1 L	126.3	-0.58	3.1	0.8	123.1	-0.95	3.0	3.5	8	WK
F847DJ	122.5	122.8 L	125.8	124.6	123.9	-0.84	3.2	1.5	124.4	-0.80	3.2	1.1	12	LD
FAAR36	118.7	123.7	118.2 H	118.9 H	119.9	-1.28	8.6	2.6	121.5	-1.14	9.7	4.6	8	LC
FUVH32	127.7	131.4	131.7	134.8	131.4	-0.03	4.3	2.9	128.9	-0.24	3.9	3.4	8	LD
H8TEBD	132.1	142.5	143.0	134.4	138.0	0.69	3.3	5.6	137.1	0.76	3.6	3.4	12	LD
HY2VW6	127.0	117.0	116.7	117.0	119.4	-1.33	4.6	5.1	123.1	-0.95	4.8	4.4	12	LC
JYWXYE	123.0	122.9	127.6	122.2	123.9	-0.84	4.8	2.5	125.3	-0.69	4.7	3.3	12	LD
KX2FXD	122.1	131.9	133.3	131.4	129.7	-0.21	4.5	5.1	125.2	-0.69	4.3	4.7	12	LC
LQGYH9	140.7	132.0	128.1	No Data	133.6	0.21	4.5	6.5	133.0	0.26	4.8	4.6	11	LC
LYRZ4A	149.6	150.1	146.9 H	147.4	148.5	1.82	5.9	1.6	146.7	1.93	5.0	2.3	12	LC
MCEPEY	133.4	131.5	133.6	133.5	133.0	0.15	4.3	1.0	135.1	0.51	4.3	2.5	8	LC
MQVKRB	128.9	126.4	127.4	126.7 L	127.4	-0.47	3.3	1.1	128.3	-0.32	3.3	1.1	12	LD
N3H93Z	147.6 L	148.4	149.7 L	152.5 *	149.5	1.94	2.1	2.2	147.0	1.96	1.7	2.7	12	TD

Report #558

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 69 lb Linerboard - 69C2

TAPPI Official Test Method T822

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
NGKH7A	123.6 H	133.2	123.4 H	125.7	126.5	-0.56	8.1	4.6	126.8	-0.50	6.3	3.5	8	LC
NXBHYU	134.8	128.8	130.2	130.8	131.2	-0.05	2.6	2.5	132.1	0.15	3.0	1.8	12	TH
PVZ46T	132.5	No Data	No Data	No Data	132.5	0.09	4.6	0.0 L	135.6	0.57	4.3	4.3	9	LD
QM4MTU	132.1	130.7	136.0	128.6	131.9	0.02	4.4	3.1	131.3	0.05	4.3	4.4	12	LD
QTQDFP	143.1	146.5	149.1	153.9 *H	148.1	1.78	5.7	4.6	148.1	2.10 *	5.7	4.6	4	LD
RL48U3	129.8	125.0	127.3	127.2	127.3	-0.47	4.5	2.0	129.2	-0.20	5.0	2.4	12	LD
RWKQDY	107.5 *H	105.5 *H	97.2 XH	106.1 *H	104.1	-2.99 X	13.7	4.7	113.7	-2.09 *	10.3	10.8 H	8	LZ
T42LUT	128.5	129.4	129.1	129.7	129.2	-0.27	4.5	0.5 L	126.9	-0.49	6.5	5.4	12	EM
TMBL29	141.6	122.1	123.6	122.7	127.5	-0.45	3.5	9.4 H	125.6	-0.64	3.2	5.2	12	LC
TMURZY	132.2	135.8	127.1	137.7	133.2	0.17	5.5	4.7	128.8	-0.26	5.5	6.3	12	LC
UJPJ9T	126.5	125.8	130.7	126.7	127.4	-0.46	3.7	2.3	129.3	-0.19	3.4	5.0	12	LC
UR46HX	146.6	144.8	146.0	141.6	144.8	1.42	3.9	2.2	144.8	1.69	3.9	2.2	4	LD
UTBKP4	131.8	148.4	140.5 L	164.5 XH	146.3	1.59	6.3	13.9 H	140.1	1.13	5.9	10.2 H	12	LC
VTVNW4	130.6	128.1	130.6	129.5	129.7	-0.21	4.3	1.2	128.7	-0.26	3.8	2.8	12	LZ
VYGGBN	125.9 L	129.0	128.3	130.0	128.3	-0.36	2.7	1.7	124.8	-0.74	2.8	6.7	12	LZ
WAWMMH	127.8	140.7	140.6	137.1	136.6	0.53	3.3	6.1	127.4	-0.43	5.4	7.9 H	12	EM
WBT4WU	132.3	134.6	133.6	136.4	134.2	0.28	4.1	1.8	134.6	0.45	4.6	2.6	8	TC
XFUYTY	147.7	152.7 *	154.0 *	147.8	150.5	2.04 *	4.7	3.3	150.9	2.44 *	4.4	2.2	12	LX
XTJYMM	148.6	144.0	144.7	140.8	144.5	1.39	5.7	3.2	141.3	1.26	5.2	3.5	12	LZ
YH2E3Q	121.2	122.4	121.6	123.0	122.0	-1.04	3.1	0.8	124.8	-0.75	2.6	3.4	12	EX
ZBDDXX	126.9	119.4	118.9	129.1	123.6	-0.88	4.3	5.2	124.6	-0.77	3.6	4.7	12	EN

Consensus (All Labs) Results

Wk Mean	130.77	131.64	131.47	130.47	Month Mean	131.65	Grand Mean	130.89
Avg SDr	4.80	4.49	4.58	4.84	Avg SDr	4.56	Avg SDr	4.76
SD btwn Labs	9.98	10.25	9.31	9.74	SD btwn Labs	9.23	SD btwn Labs	8.20
Labs Incld	55	54	51	51	SD btwn Wks	4.13	SD btwn Wks	4.86
Labs Excld	1	1	3	2	Labs Incld	54	Labs Incld	55
Labs not rcvd	0	1	2	3				

Report #558

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 69 lb Linerboard - 69C2

TAPPI Official Test Method T822

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200

(EN) - Emerson 2200

(EX) - Emerson (model not specified)

(LC) - L & W Crush Tester 48

(LD) - L&W Crush Tester 248

(LX) - L & W 506

(LY) - L & W Crush Tester 958

(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

(WK) - Zwick Z005 Crush Tester

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

Report #558

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
2VFHZX	22.0	20.8	20.5	20.3	20.9	-1.09	1.7	0.8	21.5	-0.70	1.8	0.8	15	LZ
3PTV6R	21.8	21.9	22.4	22.5	22.1	-0.18	1.8	0.4	21.4	-0.86	1.8	0.7	16	LY
46EX2L	22.6	24.3	24.5	23.6	23.7	1.03	1.8	0.8	23.2	0.80	1.7	0.9	16	LU
4FWFTT	22.7	22.1 L	20.5 L	22.6 L	22.0	-0.31	0.5	1.0	22.1	-0.24	0.4	0.8	16	LA
62U7PJ	21.3	20.4	20.9	21.9	21.1	-0.94	1.8	0.6	20.8	-1.37	1.9	0.5	16	LW
677GFT	26.8 XL	25.2 L	25.2 *L	25.6 L	25.7	2.50 *	0.5	0.8	24.3	1.78	0.4	1.3	12	BK
6CR73N	21.5	21.3	22.1	21.9	21.7	-0.50	1.5	0.4	22.1	-0.21	2.0	0.6	16	LA
6PHZCW	25.2 *	26.3 *	24.5	26.0 *	25.5	2.35 *	1.9	0.8	25.2	2.54 *	2.0	0.7	16	LA
7VYVRQ	21.5	21.5	21.3	20.4	21.2	-0.91	1.6	0.5	21.5	-0.71	1.6	0.6	12	LW
88BK7L	22.2	20.9	24.3	24.5	23.0	0.47	2.1	1.7	23.2	0.80	2.0	1.1	16	LA
8F34KU	21.4	21.7	21.2	21.6	21.5	-0.67	2.1	0.2	22.0	-0.27	1.9	0.7	14	LW
98UQ6C	20.6 L	23.4 L	22.3 L	21.7 L	22.0	-0.29	0.1	1.2	22.0	-0.26	0.1	1.0	12	LA
ADBJUG	23.9	21.6	23.9	24.2	23.4	0.76	1.6	1.2	23.3	0.88	1.7	0.9	16	LU
ANC8LD	20.9 L	19.8 L	21.8 L	20.4 L	20.7	-1.23	0.0	0.8	20.7	-1.43	0.0	0.8	4	LU
CBU73P	23.0	22.8	22.6	22.4	22.7	0.25	1.4	0.2	23.0	0.64	1.6	0.5	16	LU
CK3ZWH	24.0	23.4	22.6	23.4	23.4	0.75	2.1	0.6	23.7	1.21	2.0	0.6	16	LY
E4RYDZ	23.4	23.5	23.5	23.4	23.4	0.80	1.2	0.1 L	22.6	0.28	1.4	0.9	8	LY
FUVH32	21.8	21.0	20.8	21.5	21.3	-0.83	1.8	0.4	21.4	-0.83	1.8	0.4	8	LY
GEGH6B	24.1	25.8 *	22.6	23.7	24.1	1.27	2.4	1.4	23.3	0.88	2.0	1.2	16	LZ
H8TEBD	23.2	21.7	22.0	23.6	22.6	0.18	1.9	0.9	23.6	1.11	2.0	1.1	16	XX
J9JYGA	23.0 L	24.0 L	22.7 L	24.9 L	23.7	0.97	0.0	1.0	34.6	10.97X	0.0	12.0 H	16	LU
JGZ967	23.8	22.7	23.0	23.9	23.4	0.74	1.5	0.6	23.3	0.85	1.4	0.7	16	XX
JYWXYE	22.0	22.1	20.8	20.2	21.3	-0.81	2.2	0.9	21.8	-0.50	1.9	0.7	16	LU
KC47GW	22.6	22.6	22.6	22.6	22.6	0.16	1.0	0.0 L	22.5	0.12	0.9	0.2	16	TT
KFZUX4	20.0 L	20.2 L	19.5	22.5 L	20.6	-1.36	0.5	1.3	20.9	-1.29	0.4	0.8	16	LA
KX2FXD	22.4	22.4	23.7	23.0	22.9	0.39	2.0	0.6	22.7	0.37	2.0	0.7	16	LW
LQGYH9	24.8	23.0	21.1	No Data	22.9	0.44	1.7	1.8 H	23.5	1.02	1.9	0.9	15	LW
LYRZ4A	23.9 L	25.1 L	25.4 *L	25.9 *L	25.1	2.03 *	0.0	0.9	23.5	1.08	0.0	1.6 H	16	LA
MCEPEY	20.1	21.7	21.0	20.4	20.8	-1.18	1.7	0.7	20.9	-1.26	1.8	1.5 H	12	LU
MQVKRB	21.4	22.1	21.6	21.0	21.5	-0.63	1.8	0.5	21.5	-0.70	1.5	0.6	16	BK
MV7XA9	21.1	20.6	19.7	20.5	20.5	-1.42	1.3	0.6	20.9	-1.26	1.5	0.6	12	LW
NGKH7A	19.0 *	19.5	19.9	21.9	20.1	-1.71	1.6	1.2	20.2	-1.89	1.6	0.9	8	XX
NUBE88	23.7	23.7	22.7	24.1	23.6	0.89	2.2	0.6	23.1	0.68	1.9	1.1	16	LU
NWVL8U	22.0	21.4	20.7	20.9	21.2	-0.86	2.1	0.6	29.7	6.61 X	2.3	10.9 H	10	XX
NXBHYU	21.9	22.2	21.9	22.2	22.0	-0.24	0.9	0.2	22.0	-0.27	1.0	0.2 L	16	TT

Report #558

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
PKEYV9	21.9 L	22.6 L	20.8 L	21.5	21.7	-0.51	0.6	0.7	21.0	-1.15	0.6	1.0	16	LW
PVZ46T	22.6	No Data	No Data	No Data	22.6	0.19	1.3	0.0 L	22.7	0.30	1.8	1.1	13	LZ
QTQDFP	23.7	23.2	24.0	22.1	23.3	0.67	2.3	0.9	23.3	0.83	2.3	0.9	4	LA
RL48U3	24.2	20.9	21.2	23.5	22.4	0.04	1.9	1.7	22.5	0.19	1.8	2.6 H	16	LA
RWKQDY	21.3	21.7	19.7	21.4	21.0	-1.01	2.1	0.9	21.6	-0.61	1.9	0.7	15	LY
TMBL29	21.4	20.6	20.9	21.4	21.1	-0.97	1.9	0.4	21.5	-0.70	1.5	0.7	16	LA
TMURZY	21.8 L	No Data	No Data	No Data	21.8	-0.45	0.5	0.0 L	23.0	0.59	1.0	0.8	13	LY
UJPJ9T	21.9	21.7	22.8	21.8	22.0	-0.24	2.0	0.5	21.9	-0.35	1.9	0.4	16	LU
UTBKP4	22.4	22.8 L	21.1 L	22.5 L	22.2	-0.11	0.7	0.7	21.5	-0.73	0.6	0.8	15	LW
VTVNW4	22.0	21.5	22.1	20.3	21.5	-0.67	1.9	0.8	20.9	-1.31	1.9	0.9	16	LW
WAWMMH	22.0	22.7	23.6	22.4	22.7	0.23	1.5	0.7	22.8	0.43	1.5	0.8	16	LZ
WBT4WU	24.4 L	23.8 L	21.9 L	23.9 L	23.5	0.83	0.5	1.1	23.3	0.87	0.6	1.0	16	LA
YJ9UAW	24.1	25.4	No Data	25.5	25.0	1.97	2.3	0.8	24.3	1.75	2.3	0.7	15	LW
ZBDDXX	20.8	21.4	21.8	21.2	21.3	-0.78	1.6	0.4	21.1	-1.11	1.9	0.5	16	LY

Consensus (All Labs) Results

Wk Mean	22.36	22.36	22.07	22.53	Month Mean	22.37	Grand Mean	22.32
Avg SDr	1.64	1.60	1.68	1.65	Avg SDr	1.63	Avg SDr	1.62
SD btwn Labs	1.33	1.57	1.47	1.61	SD btwn Labs	1.33	SD btwn Labs	1.12
Labs Incld	48	47	46	46	SD btwn Wks	0.87	SD btwn Wks	0.92
Labs Excld	1	0	0	0	Labs Incld	49	Labs Incld	47
Labs not rcvd	0	2	3	3				

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 #558

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 69 lb Linerboard - 69C2

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
2VFHZX	32.2	31.0	30.6	30.5	31.1	-1.07	1.5	0.8	31.1	-0.95	1.6	0.8	10	LZ
3PTV6R	31.5	31.7	32.2	31.2	31.6	-0.78	1.7	0.4	31.0	-1.01	1.6	0.6	12	LY
46EX2L	34.8	35.9	34.4	35.5	35.2	0.97	1.5	0.7	34.9	0.82	1.4	0.8	12	LU
4FWFTT	32.0 L	31.5 L	31.0 L	30.8 L	31.3	-0.95	0.5	0.6	31.7	-0.67	0.5	0.8	8	LA
62U7PJ	31.8	31.8	32.2	31.0	31.7	-0.74	1.6	0.5	31.7	-0.67	1.6	0.4	12	LW
677GFT	37.2 L	38.5 *	36.1 L	35.8	36.9	1.83	0.7	1.3	36.5	1.55	0.8	1.0	8	BK
6CR73N	31.5	33.2	31.8	32.0	32.1	-0.55	1.6	0.7	32.3	-0.40	1.6	0.7	12	LA
6PHZCW	37.2	37.1	36.9 *	37.5	37.2	1.98	2.0	0.2	36.9	1.79	1.8	0.4	12	LA
7VYVRQ	30.7	30.8	31.1	31.8	31.1	-1.05	1.6	0.5	31.0	-1.02	1.4	0.4	12	LW
88BK7L	34.9	34.9	34.3	35.8	35.0	0.88	1.5	0.6	34.8	0.80	1.7	1.2	12	LA
8F34KU	31.7	32.1	32.3	31.5	31.9	-0.66	1.6	0.4	32.0	-0.56	1.5	0.5	11	LW
98UQ6C	32.0 L	35.4 L	33.7 L	36.5 L	34.4	0.59	0.1	2.0 H	34.8	0.77	0.1	1.3	12	LA
ADBJUG	35.8	34.8	36.0	36.8	35.9	1.32	1.4	0.8	35.6	1.17	1.4	0.7	12	LU
ANC8LD	33.9 L	33.2 L	32.7 L	33.1 L	33.2	0.01	0.0	0.5	34.5	0.62	0.0	1.4	8	LU
CBU73P	34.0	33.9	34.1	33.9	34.0	0.37	1.6	0.1 L	34.5	0.64	1.8	0.5	12	LU
CK3ZWH	34.5	34.9	33.8	34.3	34.3	0.56	1.7	0.5	34.1	0.44	1.7	0.5	12	LY
E4RYDZ	34.5	34.8	35.2	34.5	34.7	0.76	1.0	0.3	33.8	0.32	1.3	1.0	8	LZ
FUVH32	31.3	31.6	31.1	30.1	31.0	-1.08	1.5	0.6	31.2	-0.93	1.6	0.5	8	LY
GEGH6B	36.1	36.3	34.4	35.4	35.6	1.17	1.8	0.9	35.7	1.21	2.0	0.9	12	LZ
H8TEBD	33.8	34.3	34.2	32.7	33.7	0.27	1.8	0.7	34.1	0.42	1.7	0.9	12	XX
J9JYGA	34.7 L	33.8 L	34.9 L	34.0 L	34.4	0.57	0.1	0.5	42.3	4.31 X	0.1	13.3 H	12	LU
JGZ967	34.8	33.7	34.0	36.5	34.8	0.77	1.1	1.2	35.1	0.93	1.3	0.9	12	LU
JYWXYE	31.3	31.6	32.1	62.1 X	39.2	2.99 X	2.4	15.2 H	34.1	0.46	1.9	8.8 H	12	LU
KC47GW	33.7	32.9	33.9 L	33.4	33.5	0.13	0.8	0.4	33.4	0.12	0.9	0.3 L	12	TT
KFZUX4	29.8 L	30.4 L	30.4 L	33.1 L	30.9	-1.14	0.5	1.5	30.5	-1.26	0.5	1.0	12	LA
KX2FXD	34.1	33.6	34.5	34.2	34.1	0.43	1.6	0.4	33.9	0.35	1.7	1.3	12	LW
LQGYH9	33.1	33.7	30.7	No Data	32.5	-0.34	1.6	1.6 H	33.4	0.12	1.7	1.1	11	LW
LYRZ4A	36.8 L	36.2 L	36.9 *L	36.9 L	36.7	1.73	0.0	0.3	35.9	1.30	0.0	0.8	12	LA
MCEPEY	29.9	28.2 *	29.3	30.1	29.4	-1.90	1.5	0.8	30.0	-1.49	1.6	0.9	8	LU
MQVKRB	30.8	31.9	31.7	30.3	31.2	-1.02	1.2	0.7	31.3	-0.85	1.4	0.9	12	BK
MV7XA9	30.6	30.6	31.1	30.9	30.8	-1.20	1.4	0.3	30.6	-1.20	1.4	0.4	12	LW
NGKH7A	29.0 *	28.3 *	28.7 *	29.9	29.0	-2.10 *	2.4	0.7	28.0	-2.43 *	2.0	1.2	8	XX
NUBE88	33.5	33.6	33.5 H	34.4	33.7	0.26	3.0	0.5	34.5	0.61	2.2	1.3	12	LU
NWVL8U	32.7	33.4	33.4	33.2	33.2	-0.02	1.7	0.3	45.6	5.87 X	2.2	13.3 H	8	XX
NXBHYU	33.0	33.1	33.6	33.2	33.2	0.00	1.0	0.2	33.2	0.00	1.0	0.3 L	12	TT

Report #558

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 69 lb Linerboard - 69C2

TAPPI Provisional Test Method T826

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
PKEYV9	34.2	33.4	33.5	33.7	33.7	0.24	2.0	0.4	33.1	-0.02	2.0	1.2	12	LW
PVZ46T	35.5	No Data	No Data	No Data	35.5	1.12	1.5	0.0 L	34.6	0.67	1.7	1.0	9	LZ
QTQDFP	37.0	36.0	34.3	36.0	35.8	1.30	1.9	1.1	35.8	1.26	1.9	1.1	4	LA
RL48U3	32.1	33.2	32.7	31.6	32.4	-0.40	1.7	0.7	33.4	0.13	1.7	1.4	12	LA
RWKQDY	31.7	31.9	31.1	31.0	31.4	-0.89	1.6	0.4	31.7	-0.71	1.5	0.4	12	LY
TMBL29	33.0	30.9	30.9	30.9	31.4	-0.88	1.6	1.1	31.6	-0.72	1.6	0.9	12	LA
TMURZY	33.3	No Data	No Data	No Data	33.3	0.06	1.5	0.0 L	37.0	1.82	1.4	1.9	9	LY
UJPJ9T	30.3	1.6 XL	31.4	31.1	23.6	-4.76 X	1.8	14.7 H	28.7	-2.09 *	1.7	8.6 H	12	LU
UTBKP4	32.9	32.8	31.1	32.7	32.4	-0.41	2.4	0.9	31.9	-0.60	2.2	1.0	12	LW
VTVNW4	33.1	33.2	32.6	32.6	32.8	-0.18	1.6	0.3	32.4	-0.34	1.6	0.7	12	LW
WAWMMH	33.9	34.4	36.2	35.1	34.9	0.84	1.8	1.0	33.4	0.13	1.8	1.7	12	LZ
WBT4WU	31.3 L	30.8	30.7 L	31.5 L	31.1	-1.05	0.6	0.4	32.6	-0.26	0.6	1.9	8	LA
YJ9UAW	35.4	36.6	No Data	36.3	36.1	1.43	1.9	0.6	35.3	1.03	2.6	0.9	11	LW
ZBDDXX	31.1	30.3	31.2	30.7	30.8	-1.18	1.6	0.4	30.5	-1.27	1.8	0.7	12	LY

Consensus (All Labs) Results

Wk Mean	33.14	33.18	32.87	33.20	Month Mean	33.21	Grand Mean	33.16
Avg SDr	1.50	1.45	1.74	1.59	Avg SDr	1.56	Avg SDr	1.58
SD btwn Labs	2.06	2.22	1.99	2.23	SD btwn Labs	2.02	SD btwn Labs	2.12
Labs Incld	49	46	46	45	SD btwn Wks	0.77	SD btwn Wks	2.04
Labs Excld	0	1	0	1	Labs Incld	47	Labs Incld	47
Labs not rcvd	0	2	3	3				

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 with 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 #558

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
46EX2L	137.3	0.20	9.5	145.9	0.56	12.7	3	EV
4FWFTT	148.5	0.90	31.9	150.4	0.83	23.4	4	LA
677GFT	143.7	0.60	16.0	143.3	0.40	14.8	3	EV
7VYVRQ	129.9	-0.26	10.8	136.7	0.01	11.6	3	EV
88BK7L	122.1	-0.75	10.2	116.8	-1.18	12.6	4	LA
98UQ6C	142.7	0.54	21.4	140.3	0.22	18.5	2	LA
ADBJUG	110.6	-1.47	8.3	109.8	-1.59	11.8	4	LA
EJ2MPF	128.1	-0.37	9.2	132.0	-0.27	13.9	4	EV
GEGH6B	122.1	-0.75	19.9	177.5	2.45 *	84.2	4	LA
JYWXYE	142.4	0.52	16.3	141.9	0.32	12.5	4	EV
KFZUX4	107.6	-1.66	9.2	114.7	-1.30	10.7	4	EV
KX2FXD	144.4	0.64	12.1	132.0	-0.27	10.3	4	EV
LYRZ4A	116.2	-1.12	12.0	120.4	-0.96	13.8	4	LA
PVZ46T	156.3	1.39	13.3	149.3	0.77	12.9	4	LA
QTQDFP	125.9	-0.51	10.3	125.9	-0.63	10.3	1	XX
RWKQDY	156.2	1.38	15.4	155.8	1.15	13.7	4	EV
UR46HX	113.7	-1.28	13.1	116.0	-1.22	12.0	2	EV
UTBKP4	132.9	-0.08	11.7	137.7	0.07	13.9	4	EV
VTVNW4	137.9	0.24	13.3	129.6	-0.41	11.9	4	EV
ZBDDXX	163.8	1.86	11.0	153.8	1.03	12.9	4	EV

Consensus (All Labs) Results

Month Mean	134.12	Grand Mean	136.49
Avg SDr	14.75	Avg SDr	23.08
SD btwn Labs	15.97	SD btwn Labs	16.77
Labs Incld	20	Labs Incld	20

Instrument Code List as Reported by the Labs

(EV) - Emveco Microgage Model 210-R

(LA) - L & W Autoline

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

Report #558

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
6CR73N	369.0	0.65	12.6	386.1	1.73	10.3	3	XX
AHHAWM	359.4	-0.60	7.6	359.4	-0.92	7.6	1	XX
LRBKBZ	379.2	2.00	6.2	378.5	0.97	7.7	2	XX
RL48U3	360.2	-0.51	8.7	360.2	-0.84	8.7	1	XX
UJPJ9T	361.6	-0.32	9.5	363.1	-0.56	8.0	3	XX
WBT4WU	357.6	-0.85	8.4	364.2	-0.45	7.6	3	XX
XTJYMM	361.2	-0.37	7.2	369.3	0.06	6.3	3	XX

Consensus (All Labs) Results

Month Mean	364.04	Grand Mean	368.69
Avg SDr	8.80	Avg SDr	8.12
SD btwn Labs	7.59	SD btwn Labs	10.06
Labs Incld	7	Labs Incld	7

Instrument Code List as Reported by the Labs

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

Report #558

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
46EX2L	123.6	-1.20	14.5	138.4	-1.33	9.6	4	TM
4FWFTT	169.0	0.18	7.5	162.0	-0.07	26.3	4	HY
62U7PJ	173.8	0.33	8.3	171.2	0.43	7.8	4	TM
6CR73N	80.7	-2.51 *	2.2	80.8	-4.42 X	2.0	4	LZ
7VYVRQ	190.6	0.84	9.7	200.1	1.98	12.4	3	HY
8M4FGR	177.3	0.44	6.5	159.2	-0.22	7.1	4	SC
9XJPJB	161.6	-0.04	6.5	160.8	-0.13	5.4	4	TM
ADBJUG	145.8	-0.53	6.1	145.2	-0.97	8.3	4	TM
GEGH6B	136.2	-0.82	10.1	154.9	-0.45	11.7	3	TM
JYWXYE	149.4	-0.42	4.2	148.6	-0.78	6.6	4	TM
MCEPEY	153.2	-0.30	8.8	156.6	-0.35	9.4	2	XX
NGKH7A	148.8	-0.43	6.1	138.0	-1.35	7.5	2	SC
RWKQDY	187.0	0.73	19.6	180.6	0.93	17.3	2	XX
TMBL29	194.2	0.95	8.6	196.5	1.78	8.4	4	HY
UJPJ9T	180.8	0.54	3.7	181.0	0.95	3.7	4	HY
UR46HX	174.4	0.35	3.8	166.7	0.19	3.3	2	HY
UTBKP4	235.0	2.20 *	16.6	231.3	3.65 X	20.8	4	SC
WBT4WU	152.4	-0.32	7.2	151.9	-0.61	5.9	4	SC

Consensus (All Labs) Results

Month Mean	162.99	Grand Mean	163.21
Avg SDr	9.43	Avg SDr	10.90
SD btwn Labs	32.75	SD btwn Labs	18.64
Labs Incld	18	Labs Incld	16

Comments:

MCEPEY - Data appears to off by 1,000. 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 #558

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
46EX2L	28.3	0.54	1.2	27.8	0.48	1.7	4
4FWFTT	27.3	0.19	1.1	27.4	0.25	1.6	4
4LNMEM	24.0	-1.05	2.3	26.1	-0.39	2.6	4
62U7PJ	22.9	-1.44	1.9	24.4	-1.25	2.4	4
6CR73N	27.4	0.21	1.1	30.1	1.62	1.0	4
7VYVRQ	24.2	-0.97	0.8	24.3	-1.30	1.0	3
ADBJUG	25.3	-0.57	0.7	27.3	0.21	1.3	4
GEGH6B	30.0	1.17	2.7	28.1	0.60	2.9	4
JGZ967	25.0	-0.68	0.8	26.5	-0.22	1.2	4
JYWXYE	30.8	1.46	2.1	28.4	0.77	2.2	4
KX2FXD	23.2	-1.34	1.3	24.4	-1.30	1.8	4
LQGYH9	28.8	0.73	2.9	28.4	0.77	3.3	4
QTQDFP	26.6	-0.10	1.0	26.6	-0.16	1.0	1
RWKQDY	36.8	3.68 X	3.8	37.9	5.65 X	3.3	3
UJPJ9T	24.8	-0.75	1.3	24.5	-1.24	1.3	4
UTBKP4	28.4	0.58	2.4	29.7	1.44	2.8	4
WAWMMH	32.0	1.91	1.6	25.4	-0.76	1.5	4
WBT4WU	29.2	0.87	0.8	29.8	1.46	1.0	4
ZBDDXX	24.8	-0.77	1.3	25.0	-0.99	1.4	4

Consensus (All Labs) Results

Month Mean	26.83	Grand Mean	26.88
Avg SDr	1.67	Avg SDr	1.92
SD btwn Labs	2.71	SD btwn Labs	1.96
Labs Incld	18	Labs Incld	18

Instrument Code List as Reported by the Labs

(ZZ) - Instruments No Longer Tracked

Report #558

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
2AVJWN	50.3	-0.49	1.8	52.6	0.48	1.3	4	XX
46EX2L	45.8	-2.30 *	2.7	46.1	-2.13 *	3.1	4	XX
4FWFTT	50.0	-0.62	2.2	49.4	-0.80	1.6	4	LA
4LNMEM	53.3	0.71	2.5	54.9	1.40	2.9	4	GA
62U7PJ	50.0	-0.62	2.5	50.4	-0.39	3.4	4	HG
677GFT	56.5	2.00 *	2.8	54.9	1.42	2.4	3	XX
6CR73N	54.3	1.11	2.1	53.5	0.86	2.0	4	LA
7VYVRQ	53.1	0.63	1.5	52.8	0.56	1.5	4	LP
8M4FGR	52.2	0.29	1.8	51.7	0.13	1.9	4	LP
ADBJUG	52.6	0.44	1.9	51.8	0.18	2.1	4	LA
FUVH32	50.3	-0.49	1.2	50.4	-0.39	1.0	2	LP
GEGH6B	48.8	-1.10	3.4	46.0	-2.16 *	3.6	4	XX
JGZ967	41.9	-3.86 X	2.2	41.6	-3.93 X	2.0	4	LA
KZMJ6B	48.4	-1.24	1.4	48.8	-1.03	2.6	3	LA
LQGYH9	54.0	1.00	1.8	52.2	0.34	1.8	4	LP
LYRZ4A	51.8	0.11	2.0	54.3	1.18	2.5	4	TL
QM4MTU	48.9	-1.05	4.1	48.9	-1.00	3.4	4	GG
QTQDFP	52.0	0.21	1.6	52.0	0.27	1.6	1	LA
RWKQDY	53.8	0.93	4.0	52.4	0.41	2.4	4	LP
UDJQEX	53.7	0.87	2.3	52.8	0.58	2.0	4	XX
UJPJ9T	52.1	0.25	2.4	52.6	0.48	2.5	4	TP
UTBKP4	49.9	-0.65	1.9	50.4	-0.40	2.0	4	HG

Consensus (All Labs) Results

Month Mean	51.51	Grand Mean	51.37
Avg SDr	2.40	Avg SDr	2.37
SD btwn Labs	2.48	SD btwn Labs	2.49
Labs Incld	21	Labs Incld	21

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 #558

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
2VFHZX	58.9	59.3	60.4	60.0	59.7	0.34	3.2	0.7	59.5	0.21	2.7	2.7	15	LZ
32KGBM	55.9	56.2	56.9	55.2	56.0	-1.26	2.7	0.7	60.5	0.77	2.8	4.2 H	16	LC
46EX2L	55.9 H	58.2	61.6	55.3	57.8	-0.50	4.2	2.9	57.8	-0.77	3.7	2.9	12	XX
6CR73N	56.5	55.8	59.6	58.7	57.7	-0.54	2.3	1.8	56.9	-1.26	2.5	2.6	16	LD
6PHZCW	55.8	55.6	57.2	58.2	56.7	-0.96	2.1	1.2	55.7	-1.90	2.7	1.2	16	LD
6WZ9ZT	62.1	63.5	63.1	60.4	62.3	1.49	2.9	1.4	61.9	1.53	2.7	1.1	16	EM
8F34KU	59.8	62.0	64.7 *	61.0	61.9	1.31	2.0	2.1	61.1	1.09	1.9	1.8	14	LE
8L8Z7F	60.6	59.6	56.2	58.5	58.7	-0.08	3.1	1.9	58.0	-0.61	4.8	2.8	12	MB
98UQ6C	57.4	56.8	55.0	60.6	57.4	-0.64	2.6	2.3	57.1	-1.15	2.6	2.3	12	MB
ABY4ZF	59.7	59.5	No Data	No Data	59.6	0.31	2.2	0.1 L	59.1	-0.02	2.3	1.2	6	LZ
ADBJUG	53.7 H	58.8 H	59.7	57.8 H	57.5	-0.61	4.8	2.6	59.1	-0.01	3.8	2.2	16	LC
ANC8LD	57.2	57.8	63.7 H	61.6 H	60.1	0.52	3.9	3.1	60.1	0.51	3.9	3.1	4	LC
B9QEBC	59.6	59.5	59.5	59.4	59.5	0.26	3.2	0.1 L	59.2	0.04	2.8	0.5	16	LD
BTYG9G	59.3	59.5	59.3	69.5 X	61.9	1.33	1.8	5.1 H	59.6	0.25	2.2	2.8	16	LD
C34NNG	62.0	61.2	61.2	61.7	61.5	1.16	1.8	0.4 L	61.4	1.27	2.3	0.8	16	LD
CBU73P	59.4	58.3 L	61.4	61.2	60.1	0.52	2.3	1.5	61.6	1.35	1.9	2.2	16	LD
CK3ZWH	57.4	57.0	56.0	55.4 L	56.5	-1.07	1.5	0.9	58.1	-0.58	1.8	1.5	16	LD
D49TEA	56.3	63.1	58.9	61.8	60.0	0.50	2.6	3.1	60.6	0.83	2.4	1.5	16	LZ
DCKR9L	58.6	59.2	58.3	59.1	58.8	-0.04	2.7	0.4 L	58.6	-0.33	2.5	0.5	16	LD
E4RYDZ	59.3	59.5	59.2	58.3	59.1	0.08	2.0	0.5	58.8	-0.19	2.1	0.6	8	LC
FYPK4F	57.9	56.3	57.6	57.3	57.3	-0.71	2.4	0.7	57.6	-0.85	2.1	0.8	16	EM
GQT4RG	58.8	59.3	58.4	59.0	58.9	-0.01	2.2	0.4 L	58.7	-0.25	2.4	0.5	16	LC
H8TEBD	57.9	57.2	59.2	58.4	58.2	-0.31	3.3	0.8	57.9	-0.68	2.9	0.7	16	LD
HY2VW6	64.0 *	61.0	61.5	59.1	61.4	1.10	2.8	2.0	59.6	0.26	2.6	2.2	16	LC
JKYMTV	57.7	60.9	59.9 L	60.2 L	59.7	0.34	1.8	1.4	59.8	0.36	2.0	0.8	12	TH
JWR782	60.5	61.5	41.1 X	No Data	54.4	-1.98	1.6	11.5 H	59.5	0.21	1.8	5.1 H	15	LC
JYWXYE	56.8	55.5	55.4	56.2	56.0	-1.28	2.7	0.7	57.9	-0.70	2.6	1.5	16	LD
KC47GW	60.7	58.1	59.1 H	60.1	59.5	0.27	4.0	1.2	61.0	1.01	4.0	1.6	16	TG
KZMJ6B	61.0	60.7	61.0	60.4	60.8	0.82	1.9	0.3 L	61.5	1.30	2.0	1.2	12	LC
LQGYH9	62.0	61.2	61.8	No Data	61.7	1.23	2.3	0.4	60.3	0.61	2.5	2.1	15	LC
MCEPEY	59.6	58.7	61.1	59.6	59.7	0.38	2.4	1.0	61.9	1.52	2.6	2.9	12	LC
N3H93Z	63.6	65.5 *L	64.4 L	61.6 L	63.7	2.14 *	1.6	1.7	63.3	2.29 *	1.6	2.3	16	TD
NGKH7A	56.6	58.2	56.4	54.4	56.4	-1.09	2.4	1.6	56.5	-1.45	3.0	1.1	8	LC
NXBHYU	58.0	58.0	59.2	58.6	58.4	-0.20	2.4	0.6	58.7	-0.26	2.5	1.3	16	TH
PVZ46T	58.6	No Data	No Data	No Data	58.6	-0.12	2.2	0.0 L	58.0	-0.62	2.4	1.5	13	LD

Report #558

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
QTQDFP	57.8	60.1	58.9	58.4	58.8	-0.04	2.4	0.9	58.2	-0.56	2.4	1.1	16	LD
QVU783	54.6	55.3	53.9	53.2 *	54.3	-2.04 *	2.6	0.9	42.9	-9.00 X	2.0	15.4 H	8	TX
RWKQDY	57.3	57.1	57.0	57.7	57.3	-0.70	2.7	0.3 L	57.7	-0.81	2.6	0.7	16	LZ
TMBL29	60.3	62.0	63.1	60.0	61.4	1.08	2.4	1.5	58.4	-0.43	2.5	3.4	16	LC
UDJQEX	61.8	60.2	59.2	60.1	60.3	0.63	2.6	1.1	60.1	0.51	2.5	0.7	16	LD
UJPJ9T	61.6	62.2	59.0	59.9	60.7	0.79	3.4	1.5	60.3	0.64	3.1	1.9	16	LC
VYGGBN	52.4 *	51.8 X	52.6 *	56.2	53.3	-2.48 *	3.5	2.0	61.4	1.26	3.4	6.2 H	16	XX
WAWMMH	59.1	60.6	58.9	55.7	58.6	-0.14	2.5	2.1	55.6	-1.99	3.1	2.6	16	LZ
WJ2U3H	61.0	63.1	60.5	62.3	61.7	1.24	2.0	1.2	59.8	0.36	2.1	1.6	16	MB
XFUYTY	59.0	60.1	59.5	58.9	59.4	0.21	2.3	0.6	57.8	-0.74	2.3	1.2	16	LD
YJ9UAW	55.1	57.2	No Data	55.7	56.0	-1.27	3.4	1.1	55.5	-2.06 *	3.9	1.6	14	LC

Consensus (All Labs) Results

Wk Mean	58.67	59.33	59.27	58.71	Month Mean	58.89	Grand Mean	59.15
Avg SDr	2.86	2.71	2.54	2.73	Avg SDr	2.69	Avg SDr	2.73
SD btwn Labs	2.50	2.36	2.67	2.24	SD btwn Labs	2.27	SD btwn Labs	1.80
Labs Incld	46	44	42	41	SD btwn Wks	2.36	SD btwn Wks	2.24
Labs Excld	0	1	1	1	Labs Incld	46	Labs Incld	45
Labs not rcvd	0	1	3	4				

Instrument Code List as Reported by the Labs

(EM) - Emerson 1200 Series

(LD) - L&W Crush Tester 248

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

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

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

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

(LC) - L & W Crush Tester 48

(LE) - I & W CRUSH TESTER 275

(MB) - Messmer Buchel K440

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

(TX) - TMI Crush Tester (model not specified)

Report #558

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
2AVJWN	67.3	67.1	67.7	67.5	67.4	0.27	1.6	0.2 L	69.6	0.71	1.4	2.0	16	XX
2VFHZX	64.5	71.2	70.5	72.9	69.8	0.76	2.9	3.7	69.0	0.58	3.2	2.7	15	LZ
6CR73N	70.2	69.7	71.0	71.4	70.6	0.92	2.0	0.8	68.9	0.57	2.1	1.5	16	LD
8F34KU	66.1	64.8	65.9	65.2	65.5	-0.13	2.5	0.6	65.1	-0.24	2.3	1.5	14	LE
8L8Z7F	58.3	55.9	56.5 *	57.6	57.1	-1.88	1.8	1.1	55.6	-2.23 *	1.9	2.8	12	MB
BTYG9G	69.1	69.9	69.3	58.9	66.8	0.14	1.8	5.3 H	67.0	0.15	1.9	2.9	16	LD
C34NNG	69.6	69.6	69.3	69.4	69.5	0.70	2.2	0.2 L	69.7	0.72	2.3	0.8	12	XX
CBU73P	64.8	64.7	65.8	64.9	65.0	-0.23	1.8	0.5	63.7	-0.53	1.9	1.8	16	LD
D49TEA	57.0 H	53.3 *H	56.2 *H	56.4 H	55.7	-2.16 *	5.5	1.6	57.7	-1.79	4.9	5.5 H	8	XX
LQGYH9	61.3	63.3	63.5	No Data	62.7	-0.71	2.1	1.2	64.0	-0.48	1.9	1.9	15	XX
N3H93Z	69.7 L	68.9 L	72.1	70.5 L	70.3	0.87	1.2	1.4	70.8	0.95	1.2	1.3	16	TD
QTQDFP	61.7	67.4	65.4	67.3	65.4	-0.14	2.5	2.7	65.4	-0.17	2.5	2.7	4	LD
UDJQEX	67.0	69.6	70.1	68.4	68.8	0.56	2.3	1.4	69.6	0.70	2.1	1.2	12	XX
UJPJ9T	71.7	71.8	70.4	70.7	71.1	1.04	2.0	0.7	71.3	1.06	2.0	1.6	16	LC

Consensus (All Labs) Results

Wk Mean	65.60	66.23	66.68	66.23	Month Mean	66.12	Grand Mean	66.24
Avg SDr	2.45	2.55	2.60	2.40	Avg SDr	2.50	Avg SDr	2.41
SD btwn Labs	4.56	5.55	5.03	5.43	SD btwn Labs	4.80	SD btwn Labs	4.75
Labs Incld	14	14	14	13	SD btwn Wks	2.06	SD btwn Wks	2.43
Labs Excld	0	0	0	0	Labs Incld	14	Labs Incld	14
Labs not rcvd	0	0	0	1				

Instrument Code List as Reported by the Labs

(LC) - L & W Crush Tester 48

(LD) - L&W Crush Tester 248

(LE) - L & W CRUSH TESTER 275

(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 #558

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
32KGBM	19.5 X	19.7 XL	19.6 X	19.6 X	19.6	-10.30 X	1.9	0.1 L	24.7	-7.40 X	2.2	3.9 H	12	XX
6CR73N	40.5	38.1	38.1	38.6	38.8	-0.07	1.9	1.1	38.9	0.26	1.9	1.2	16	LD
8L8Z7F	29.9 X	30.2 XH	27.1 X	30.2 X	29.4	-5.10 X	2.7	1.5	29.1	-5.04 X	2.3	1.5	12	MB
9LQ3DF	39.4	39.4	38.7	39.9	39.4	0.20	1.7	0.5	39.7	0.68	2.1	2.1	16	TH
ABY4ZF	40.0	38.0	No Data	No Data	39.0	0.03	1.6	1.4	35.7	-1.49	1.7	2.7	6	EM
ANC8LD	38.2	40.4	39.0	37.4	38.7	-0.12	2.1	1.3	38.7	0.16	2.1	1.3	4	LD
B9QEBC	37.7	37.8	37.8	37.6 H	37.7	-0.66	2.8	0.1 L	37.7	-0.40	2.4	0.5	16	LD
C34NNG	40.5	40.5	39.8	40.7	40.4	0.74	1.7	0.4	40.0	0.85	1.8	0.6	16	LD
CN2EK8	37.4	35.8	36.1 L	36.3	36.4	-1.36	1.2	0.7	35.7	-1.46	1.0	0.7	16	WK
E4RYDZ	39.8	40.6	40.9	40.3	40.4	0.75	1.9	0.5	40.1	0.88	2.0	0.5	8	WK
FYPK4F	41.9	40.7	40.4	42.0	41.2	1.20	1.8	0.8	39.0	0.28	1.6	1.6	16	LC
HY2VW6	37.1	34.8	35.1	36.7	35.9	-1.62	1.5	1.1	35.6	-1.51	1.5	0.9	16	LC
JKYMTV	36.9	36.3	38.4 L	39.2	37.7	-0.67	1.5	1.3	35.5	-1.58	1.5	2.4	12	TH
JWR782	43.7 *	43.8 *	61.2 X	No Data	49.5	5.62 X	1.4	10.1 H	40.5	1.11	1.5	6.4 H	15	LC
KZ8ZMY	32.5 XH	36.9 H	37.2	38.1	36.2	-1.49	3.3	2.5 H	37.1	-0.73	3.5	2.2	16	LZ
KZMJ6B	42.6	42.3	42.7	44.1 *	42.9	2.12 *	1.8	0.8	41.1	1.42	1.7	2.7	12	LD
PVZ46T	40.2	No Data	No Data	No Data	40.2	0.64	2.4	0.0 L	40.5	1.09	2.0	1.3	13	LD
QTQDFP	38.5 H	39.8	41.6	40.9	40.2	0.65	2.3	1.3	39.8	0.74	2.1	1.4	16	LD
QVU783	25.2 XH	28.6 XH	26.3 XH	26.8 XH	26.7	-6.51 X	3.4	1.4	26.1	-6.64 X	3.6	1.7	12	TX
UDJQEX	37.9	36.5	37.1	36.2	36.9	-1.08	2.1	0.8	37.0	-0.76	2.1	1.0	16	LD
UJPJ9T	40.1	40.6	40.2	40.4	40.3	0.71	1.9	0.2	38.4	-0.03	1.9	2.0	16	LC
WAWMMH	36.4	37.9	38.5	38.4	37.8	-0.62	2.3	1.0	37.4	-0.58	2.0	1.5	16	EM
XFUYTY	40.7	40.9	40.0	39.1	40.2	0.64	1.7	0.8	40.4	1.07	1.7	1.3	16	LZ

Consensus (All Labs) Results

Wk Mean	39.44	39.00	38.92	39.17	Month Mean	38.97	Grand Mean	38.44
Avg SDr	1.91	2.00	2.00	1.94	Avg SDr	2.03	Avg SDr	1.97
SD btwn Labs	2.00	2.36	1.97	2.13	SD btwn Labs	1.88	SD btwn Labs	1.86
Labs Incld	19	19	17	17	SD btwn Wks	1.08	SD btwn Wks	2.13
Labs Excld	4	3	4	3	Labs Incld	19	Labs Incld	20
Labs not rcvd	0	1	2	3				

Report #558

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

(TX) - TMI Digital Crush Tester (model not specified)

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

(LC) - L & W Crush Tester 48

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

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

(WK) - Zwick Z005 Crush Tester

Report #558

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
677GFT	14.0 L	13.8 L	13.6 L	13.5 L	13.7	1.39	0.1	0.2	13.1	0.46	0.1	1.1	12	BK
6CR73N	12.6	12.0	12.9	12.5	12.5	-0.90	0.8	0.4	12.4	-0.83	0.7	0.4	16	LA
98UQ6C	No Data	12.0 L	12.0 L	12.0 L	12.0	-1.82	0.0	0.0 L	11.8	-2.12 *	0.0	0.8	11	LA
BTYG9G	13.1	13.0	12.6	13.2	13.0	0.01	0.7	0.3	12.9	0.15	0.7	0.3	16	LA
D49TEA	12.3	12.8	11.9	12.5	12.4	-1.15	0.7	0.4	12.3	-1.07	0.7	0.3	16	LW
DCKR9L	12.8	12.9	12.9	13.0	12.9	-0.15	0.8	0.1	12.8	-0.14	0.8	0.2	16	LB
E4RYDZ	13.6	13.9	13.7	13.6	13.7	1.36	0.7	0.1	13.2	0.79	0.7	0.5	8	LB
FYPK4F	12.7	12.8	12.5	12.0	12.5	-0.87	0.7	0.3	12.3	-1.17	0.7	0.6	16	LB
GQT4RG	12.8	13.1	12.9	12.8	12.9	-0.19	0.7	0.1	12.8	-0.14	0.7	0.2	16	LB
JWR782	13.2	12.8	13.1	No Data	13.1	0.16	0.6	0.2	13.2	0.73	0.6	0.4	15	XX
JYWXYE	12.2	12.5	12.3	12.3	12.3	-1.18	0.9	0.1	12.4	-0.81	0.9	0.2	12	LU
KZ8ZMY	14.1	13.1	13.1	13.0	13.3	0.66	0.9	0.5	13.4	1.11	0.8	0.7	16	LA
KZMJ6B	13.6	13.4	14.1 *	14.0	13.8	1.50	0.6	0.4	13.5	1.21	0.6	1.0	12	LA
NXBHYU	13.3	13.3	13.3	13.6	13.4	0.73	0.6	0.1	12.9	0.05	0.7	0.7	16	TT
PVZ46T	13.3	No Data	No Data	No Data	13.3	0.59	0.8	0.0 L	13.2	0.74	0.8	0.8	13	LZ
QTQDFP	13.6	13.1	12.8	13.3	13.2	0.41	0.9	0.3	13.1	0.42	0.8	0.6	16	LA
QVU783	12.9 L	13.0 L	12.2 L	11.9 L	12.5	-0.83	0.0	0.5	17.8	9.83 X	0.0	5.4 H	16	TS
RL48U3	13.1	13.3	13.3	13.2	13.2	0.50	0.8	0.1	13.7	1.77	0.9	2.3 H	16	LA
RWKQDY	12.1	12.6	12.5	12.0	12.3	-1.30	0.8	0.3	12.4	-0.95	0.7	0.4	16	LB
UJPJ9T	12.5	12.5	12.9	12.5	12.6	-0.69	0.6	0.2	12.3	-1.00	0.7	0.3	16	LU
WAWMMH	13.4	12.8	13.1	12.9	13.1	0.14	0.7	0.3	12.6	-0.44	0.6	0.7	16	LZ
YJ9UAW	13.7	13.6	No Data	14.2	13.9	1.63	0.7	0.3	13.5	1.26	0.9	0.9	15	LW

Consensus (All Labs) Results

Wk Mean	13.09	12.95	12.89	12.90	Month Mean	12.97	Grand Mean	12.84
Avg SDr	0.76	0.67	0.64	0.69	Avg SDr	0.69	Avg SDr	0.71
SD btwn Labs	0.58	0.50	0.57	0.68	SD btwn Labs	0.54	SD btwn Labs	0.51
Labs Incld	21	21	20	20	SD btwn Wks	0.28	SD btwn Wks	0.79
Labs Excld	0	0	0	0	Labs Incld	22	Labs Incld	21
Labs not rcvd	1	1	2	2				

Report #558

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)