



Containerboard Interlaboratory Testing Program

Participant Summary Report #564 (K) - September 2016

Revision Notice:

CTS discovered that some flags on the Monthly Results CPV and SD Wks were incorrectly assigned for this cycle. The statistical calculations are correct, only the flag was displayed in error. CTS notified all affected laboratories. If you have any questions, please do not hesitate to contact Kyle Kruger at containerboard@cts-interlab.com or (571) 434-1925 (ext. 115)

[Introduction to the Containerboard Program](#)

[Explanation of Tables and Definitions of Terms](#)

Analysis	Sample	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	42D2	Mullen Burst of Linerboard, 42 lb Linerboard
206	56A1	Mullen Burst of Linerboard, 56 lb Linerboard
215	42D2	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
216	56A1	Ring Crush of Linerboard, Rigid Platen Type, 56 lb Linerboard
223	42D2	STFI of Linerboard, 42 lb Linerboard
224	56A1	STFI of Linerboard, 56 lb Linerboard
228	56A	Roughness - Stylus Method, 56 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 56 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
26 lb Corrugating Medium	CM81	October 2015-Current
	CM73	December 2013-September 2015
36 lb Linerboard	36Z3	December 2014-Current
	36Z2	February 2012-October 2014
42 lb Linerboard	42D2	August 2016-Current
	42D1	April 2015-July 2016
56 lb Linerboard	56A1	July 2016-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 Incl - The number of laboratory Means included in the Wk Mean for that week.
- Labs Excl - 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 the participants.

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:

<u>Flag</u>	<u>Explanation</u>
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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 variability between weekly means (high week-to-week variation). |
| L | Indicates low variability between weekly means (low week-to-week variation). |



Containerboard Interlaboratory Testing Program
Analysis 201

Report #564 (K)
September 2016

Top to Bottom Box Compression Strength, Corrugated Boxes - BX10

TAPPI Official Test Method T804

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
27QJ76	649.0	-0.66	23.7	655.7	-0.49	46.2	4	LS
3CPPZX	632.4	-0.90	10.1	600.1	-1.42	19.7	4	LL
3PCU9V	546.4	-2.11 *	262.0	607.5	-1.29	132.6	4	EX
4BRE3A	692.3	-0.05	35.2	681.4	-0.07	36.5	4	EX
4JPAZ9	842.2	2.07 *	54.0	830.4	2.41 *	39.6	4	TB
7CVC3V	616.4	-1.12	48.7	641.1	-0.74	34.0	4	LG
ATU6KE	748.1	0.74	44.4	679.3	-0.10	37.6	4	LM
BTQ3A2	637.6	-0.82	30.1	631.8	-0.89	31.0	4	LH
D2ADCR	745.9	0.71	32.4	783.0	1.62	42.5	4	TE
G6XYVP	741.2	0.64	17.1	737.7	0.87	22.6	4	XX
GFWY79	691.2	-0.06	61.6	690.0	0.08	47.2	4	LG
H4LLTE	796.0	1.42	26.3	758.5	1.22	25.5	4	LH
KHEZ28	711.2	0.22	16.6	671.0	-0.24	42.6	4	ES
NENTAA	657.6	-0.54	39.4	649.9	-0.59	26.9	4	ER
PFUYNL	741.7	0.65	46.0	758.0	1.21	44.4	4	LG
TDCPLY	680.5	-0.21	61.0	668.1	-0.29	59.5	4	ER
TLQVYG	618.8	-1.09	34.2	627.8	-0.96	28.8	4	LS
U3P6KY	769.0	1.04	18.9	750.8	1.09	24.3	4	ER
W9RVZA	635.0	-0.86	27.1	650.9	-0.57	30.5	4	ET
XDGXEU	666.2	-0.42	39.2	650.0	-0.59	45.3	4	ER
YB7D96	784.6	1.26	37.3	653.8	-0.52	39.7	4	LL
YU2ZEU	701.4	0.08	30.2	701.1	0.26	42.3	4	LM

Consensus (All Labs) Results

Month Mean	695.67	Grand Mean	685.35
Avg SDr	66.83	Avg SDr	46.49
SD btwn Labs	70.66	SD btwn Labs	60.19
Labs Incd	22	Labs Incd	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	690.68	78.25	4.99	5
Clip sealing	684.21	62.26	11.45	15
Tape sealing	794.05	68.09	98.38	2



Containerboard Interlaboratory Testing Program
Analysis 201

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Top to Bottom Box Compression Strength, Corrugated Boxes - BX10

TAPPI Official Test Method T804

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program
 Analysis 202
Edgewise Compressive Strength, by T811, Corrugated board - ECT9
 TAPPI T811

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WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
27QJ76	42.8	0.45	2.1	40.4	-0.19	2.3	4	EM
7L3Q94	37.9	-1.12	1.0	37.4	-0.96	1.0	4	WK
GFWY79	41.8	0.13	3.1	44.9	0.94	2.0	4	LZ
H4LLTE	40.5	-0.30	0.8	38.6	-0.66	1.0	4	TC
TLQVYG	44.7	1.03	1.4	44.1	0.74	1.1	4	LC
UWM62W	37.0	-1.39	1.0	36.5	-1.19	0.9	4	XX
XU7ZZ4	45.2	1.21	1.0	46.4	1.32	1.2	4	TB

Consensus (All Labs) Results				
Month Mean		41.42	Grand Mean	41.18
Avg SDr		1.69	Avg SDr	1.47
SD btwn Labs		3.16	SD btwn Labs	3.96
Labs Incd		7	Labs Incd	7

Key to Instrument Codes Reported by Participants

- | | |
|--|---|
| EM Emerson 1200 Series
LZ L&W Crush Tester (model not specified)
TC TMI Monitor/Compression Tester, Model 17-37
XX Instrument make/model not specified by lab | LC L&W Crush Tester 48
TB TMI Monitor/Compression Tester, Model 17-70
WK Zwick Z005 Crush Tester |
|--|---|



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated board - ECT9
 TAPPI T839

Report #564 (K)
September 2016

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
27QJ76	45.8	0.23	2.0	46.3	0.15	1.5	4	EM
3CPPZX	47.8	0.82	2.2	44.8	-0.42	1.7	4	LC
3PCU9V	41.2	-1.12	1.5	44.4	-0.58	2.0	4	LD
43H83Z	44.3	-0.23	1.5	45.3	-0.23	1.4	4	LC
44CTVR	50.5	1.60	2.0	49.7	1.43	3.3	4	LC
4BRE3A	48.9	1.14	1.0	48.5	0.98	0.9	4	TL
4JPAZ9	51.0	1.76	3.5	49.3	1.29	1.9	4	LD
7ZJJYV	42.5	-0.75	1.6	45.3	-0.21	1.7	3	TM
9U8DCN	49.6	1.33	2.4	47.4	0.55	3.0	4	LC
ATU6KE	49.1	1.18	1.6	45.6	-0.10	2.3	4	EM
BTQ3A2	44.0	-0.29	1.4	51.4	2.06 *	2.0	4	EM
BWLW6G	44.9	-0.05	1.5	46.1	0.07	1.6	4	LD
CBLVTD	46.1	0.32	1.3	45.8	-0.02	2.1	4	LD
FHTTTT	46.0	0.29	3.1	47.1	0.45	2.4	3	CT
GFWY79	45.1	0.03	2.2	44.0	-0.70	2.6	4	LE
H4LLTE	43.8	-0.35	0.7	43.2	-1.03	0.8	4	TC
HH72WD	41.8	-0.96	1.9	43.8	-0.80	1.5	4	LC
KHEZ28	46.2	0.35	1.2	46.2	0.13	1.7	4	LD
KJRMFE	43.1	-0.58	1.3	43.2	-1.03	1.7	4	LD
MC2UGK	49.0	1.15	1.1	47.8	0.72	1.1	4	EM
MNAWFM	45.7	0.19	0.9	44.9	-0.37	1.2	4	LD
NENTAA	39.4	-1.65	3.7	51.4	2.08 *	4.6	4	TB
PFUYNL	45.4	0.11	2.3	45.1	-0.29	2.6	4	EM
PP3AFK	44.4	-0.18	1.5	44.1	-0.70	1.6	4	TG
Q8TYQ6	43.5	-0.44	1.4	45.1	-0.29	1.3	4	TK
RKWMFD	41.9	-0.92	1.8	40.8	-1.93	1.6	4	TB
RZCNC4	43.0	-0.60	1.5	42.8	-1.17	2.2	4	LC
TDCPLY	36.5	-2.49 *	5.5	41.9	-1.52	3.4	4	EN
TL9JLH	45.7	0.21	1.4	44.9	-0.39	1.5	3	EM
TLQVYG	46.5	0.42	2.2	47.1	0.47	1.6	4	LC
U3P6KY	42.2	-0.84	0.9	41.9	-1.50	1.1	4	EM
UWM62W	37.1	-2.34 *	0.7	36.5	-3.55 X	0.7	4	XX
VJBA4C	48.1	0.91	1.8	48.3	0.90	1.7	4	LD
W9RVZA	51.2	1.79	2.1	51.5	2.10 *	1.7	4	TD
XDGXEU	47.1	0.59	0.9	47.0	0.43	1.8	4	LD
XU7ZZ4	46.0	0.28	0.3	47.3	0.52	1.1	4	TG
Y7E6NB	41.9	-0.93	1.2	42.4	-1.32	2.3	4	TD
YB7D96	44.5	-0.15	0.7	44.9	-0.39	1.2	4	BU
YU2ZEU	45.7	0.18	0.5	47.7	0.68	0.8	4	TG



Containerboard Interlaboratory Testing Program
Analysis 203
Edgewise Compressive Strength by T839, Corrugated board - ECT9
TAPPI T839

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Consensus (All Labs) Results			
Month Mean	45.04	Grand Mean	45.90
Avg SDr	1.96	Avg SDr	2.01
SD btwn Labs	3.41	SD btwn Labs	2.65
Labs Incl	39	Labs Incl	38

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
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	TM	TMI/Hinde & Dausch
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42D2
 TAPPI Official Test Method T807

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
27QJ76	99.7 *	101.3	103.1	100.9 *	101.2	-2.12 *	10.1	1.4	106.2	-0.82	11.1	5.4	8	RE
28YXBP	106.1	110.4	108.8	109.1	108.6	-0.05	12.0	1.8	109.4	0.17	10.8	2.7	8	AH
2KL69Q	107.3	112.2	112.4	113.0	111.2	0.69	12.2	2.6	110.0	0.32	12.0	2.9	8	TB
3DGLM8	110.4	110.6	112.2	112.7 L	111.5	0.76	4.9	1.1	112.1	0.98	4.8	1.1	8	XX
3PCU9V	113.0	112.7	111.5	118.5 *	113.9	1.45	9.9	3.1	112.0	0.93	9.0	4.4	8	AH
44CTVR	112.4	117.1	116.9	114.1	115.1	1.80	11.9	2.3	114.5	1.69	11.3	2.4	8	LA
6VWGEK	112.0	112.7	112.6	107.7	111.3	0.70	11.5	2.4	110.7	0.54	12.3	3.4	8	LA
6X2346	118.3 *	112.7	111.1	106.4	112.1	0.95	8.5	4.9	115.2	1.91	8.6	5.8	8	LC
72Y3JT	110.6	106.9	108.2	110.5	109.0	0.08	12.9	1.8	109.2	0.09	12.1	2.1	8	LA
7CVC3V	109.4	111.2	115.8	114.2	112.7	1.10	11.0	2.9	112.8	1.17	11.5	3.8	8	AH
7ZM928	106.2	110.8	109.3	112.2	109.6	0.24	14.5	2.5	109.0	0.03	12.7	2.4	8	XX
8RM94Q	110.2 L	110.1	110.1	110.2	110.1	0.39	5.8	0.0 L	109.8	0.26	7.2	0.4 L	8	LJ
8VKR2H	110.3	108.4	105.3	104.6	107.2	-0.46	11.5	2.7	106.3	-0.80	11.2	3.2	8	LA
9HFTVX	103.5	106.4	105.7	114.0	107.4	-0.38	10.2	4.5	107.4	-0.45	10.2	3.4	8	LC
A3FCGJ	113.8	106.7	110.8	109.2	110.1	0.38	10.5	3.0	108.9	0.01	11.2	3.2	8	LC
ATU6KE	103.7	101.7	98.8 *	100.8 *	101.3	-2.12 *	10.7	2.0	104.4	-1.36	9.9	3.9	8	AH
BE4VBE	103.9	111.9	116.2	115.2	111.8	0.85	8.2	5.6	111.2	0.70	9.2	4.3	8	LC
BQZYGU	109.7	110.4	110.3	108.5	109.7	0.27	7.0	0.9	109.1	0.07	7.3	1.2	8	AH
CBLVTD	106.2	105.1 L	107.2	103.3	105.5	-0.93	6.7	1.7	105.1	-1.15	7.1	1.2	8	LA
CCBJTK	109.3	111.0	117.1	108.9	111.6	0.79	7.2	3.8	110.3	0.43	8.5	3.0	8	LC
D38NAF	106.2	107.2	110.5	109.4 L	108.3	-0.12	5.7	2.0	111.8	0.88	7.0	4.5	8	LA
D4ZG6Y	110.2	104.0	101.3 L	114.2	107.4	-0.38	6.4	5.9	108.3	-0.17	7.3	4.8	8	AX
DK7J6R	109.1	113.3 L	107.4	108.2	109.5	0.21	6.2	2.6	111.5	0.79	7.0	2.8	8	TP
EMTKNK	107.0	102.2	110.7	108.1	107.0	-0.50	11.1	3.5	108.3	-0.17	12.0	3.6	8	LA
FDVANA	120.9 X	112.9	117.7	109.9	115.4	1.86	10.8	4.9	114.5	1.69	11.6	3.6	8	LZ
FHTTTT	99.9 *	101.6	No DATA	No DATA	100.8	-2.26 *	13.6	1.2	100.7	-2.47 *	15.3	3.2	6	XX
GFH9JJ	113.0	114.7	104.1	106.2	109.5	0.20	10.7	5.1	108.6	-0.08	10.6	3.8	8	LC
GFY79	113.1	112.2	112.7	113.6	112.9	1.17	12.8	0.6	109.9	0.30	11.6	12.2 H	7	LZ
GTLYWB	113.9	115.7	116.5	117.6 *	115.9	2.02 *	8.8	1.6	115.4	1.97	10.5	1.3	8	LA
H4LLTE	113.0	109.0	110.5	108.0	110.1	0.38	11.5	2.2	111.3	0.71	12.3	2.7	8	AA
JFUNRG	101.5	102.8	104.8	101.5	102.7	-1.72	10.5	1.6	102.0	-2.08 *	11.3	1.2	8	LA
KHEZ28	114.8	107.4	114.3	107.8	111.1	0.65	11.6	4.0	110.1	0.36	11.5	4.0	8	LA
KJRMFE	106.4	104.8	100.4	106.3	104.5	-1.21	9.1	2.8	106.8	-0.62	10.0	3.3	8	LC
KM7367	102.7	104.5	103.0	103.0	103.3	-1.54	9.1	0.8	105.3	-1.07	10.3	3.5	8	LB
KYJKGA	110.0	109.3	112.0	114.4	111.4	0.75	10.5	2.3	111.7	0.84	11.8	3.4	8	LC



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42D2
 TAPPI Official Test Method T807

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
LKY4A4	105.9	117.3 *	110.4	111.0	111.2	0.68	11.6	4.7	112.0	0.95	11.5	3.3	8	AX
MNAWFM	110.7 L	107.2	107.2	109.4	108.6	-0.04	7.7	1.7	108.0	-0.26	8.6	2.4	8	AA
MYRHM3	108.8	112.9	106.4	106.7	108.7	-0.02	8.1	3.0	108.8	-0.04	8.9	3.1	8	TB
NENTAA	105.4	101.9	103.3	103.5	103.5	-1.49	11.8	1.4	101.2	-2.33 *	11.5	3.3	8	LA
NMHZTE	110.5	110.5	108.9	108.8	109.7	0.26	10.1	1.0	108.5	-0.10	10.1	2.4	8	LA
NRQJR8	114.6	107.2	113.7	110.5	111.5	0.77	9.1	3.4	113.6	1.41	9.6	3.8	8	LJ
PRMFE9	110.4	111.2	115.1	NO DATA	112.2	0.97	11.6	2.5	111.3	0.72	11.6	3.3	6	LJ
QDJAZ4	108.6	99.0 *	95.8 *	110.4	103.5	-1.50	8.5	7.2 H	103.5	-1.64	8.5	7.2 H	4	LA
T2E4YZ	111.5	106.4	109.2	111.4	109.6	0.25	13.7	2.4	109.9	0.32	12.4	1.8	8	LZ
T63HMB	106.6	103.0 L	106.8	103.7	105.0	-1.05	6.2	2.0	105.3	-1.10	5.6	1.7	8	RE
TCKQB8	111.5	103.8	110.1	111.6	109.3	0.14	12.4	3.7	109.7	0.23	12.6	4.3	8	TB
TLQVYG	102.7	105.4	103.1	106.4	104.4	-1.23	8.3	1.8	106.3	-0.79	8.6	3.9	8	AH
UGP7XZ	103.7	113.9	109.3	106.0	108.2	-0.15	9.2	4.4	108.9	0.00	10.7	3.4	8	LA
V38D89	111.1	106.3	106.0	110.6	108.5	-0.07	9.3	2.7	106.7	-0.66	10.1	2.9	8	AH
VEZY9W	103.4	110.7	105.1 L	107.5 L	106.7	-0.59	8.1	3.2	106.9	-0.59	9.5	2.4	8	LA
VJBA4C	109.8	110.1	109.3	110.8	110.0	0.35	10.0	0.6	110.3	0.42	9.7	0.9	8	LA
X3WL63	107.6	108.6	104.5	107.8	107.1	-0.46	12.3	1.8	106.3	-0.79	11.5	3.0	8	LC
X62EY2	105.7	107.5	102.3	108.2	105.9	-0.80	10.2	2.6	104.5	-1.31	9.8	2.6	8	LC
XDGXEU	110.2	110.2	108.9	107.1	109.1	0.09	12.4	1.5	108.7	-0.06	11.6	1.4	8	AH
Z84WB2	109.9	110.3	107.7	107.1	108.8	0.00	10.5	1.6	108.9	0.02	10.7	1.8	8	LC

Consensus (All Labs) Results									
Wk Mean	108.62	108.64	108.75	109.07	Month Mean	108.77	Grand Mean	108.89	
Avg SDr	10.33	9.99	10.21	10.07	Avg SDr	10.20	Avg SDr	10.39	
SD btwn Labs	4.00	4.27	4.87	3.98	SD btwn Labs	3.55	SD btwn Labs	3.31	
Labs Incl	54	55	54	53	SD btwn Wks	3.02	SD btwn Wks	3.66	
Labs Excl	1	0	0	0	Labs Incl	55	Labs Incl	55	
Labs not Rcvd	0	0	1	2					



Containerboard Interlaboratory Testing Program
Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42D2
TAPPI Official Test Method T807

Report #564 (K)
September 2016

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program
 Analysis 206
Bursting Strength (Mullen), 56 lb Linerboard - 56A1
 TAPPI Official Test Method T807

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
27QJ76	111.9	112.0	102.7	108.9	108.9	-1.10	10.4	4.3	113.5	-0.11	12.7	5.9	8	RE
28YXBP	114.6	111.0	109.7	111.2	111.6	-0.50	10.7	2.1	112.6	-0.31	11.3	2.6	8	AH
2KL69Q	118.0	116.9	115.6	113.4	116.0	0.45	11.0	2.0	114.7	0.18	11.0	3.6	8	TB
3DGLM8	123.9	123.8 L	128.0 *	125.0 *	125.2	2.45 *	4.6	2.0	125.5	2.71 *	5.0	1.8	8	XX
3PCU9V	121.0	116.0	119.0	117.5	118.4	0.97	10.3	2.1	116.3	0.54	9.9	3.2	8	AH
44CTVR	118.5	118.0	115.7	113.4	116.4	0.54	10.1	2.4	118.0	0.95	10.4	3.5	8	LA
6VWGEK	116.2	117.6	117.1	116.0	116.7	0.61	10.0	0.8 L	114.7	0.18	9.8	3.4	8	LA
6X2346	125.4	170.3 X	117.6	122.1	133.9	4.33 X	10.0	24.5 H	126.8	3.00 X	8.3	18.1 H	8	LC
72Y3JT	115.9	110.9	112.7	117.3	114.2	0.06	11.6	2.9	113.5	-0.11	10.8	3.4	8	LA
7CVC3V	119.8	108.7	114.3	119.1	115.5	0.34	8.9	5.1	115.0	0.24	9.8	5.1	8	AH
7ZM928	106.8	108.7	113.5	114.9 H	111.0	-0.64	12.4	3.8	113.8	-0.03	10.8	4.4	8	XX
8RM94Q	111.4	111.4	111.4	111.4	111.4	-0.54	7.0	0.0 L	107.9	-1.41	7.5	3.7	8	LJ
8VKR2H	105.9	106.1	108.3	104.7	106.3	-1.67	12.2	1.5	106.3	-1.80	12.2	1.5	4	LA
9HFTVX	110.5	107.5	106.4	No DATA	108.1	-1.26	10.9	2.1	108.6	-1.25	10.1	2.4	7	LC
A3FCGJ	112.7	112.1	116.2	111.1	113.0	-0.19	9.4	2.3	113.7	-0.06	11.8	4.3	8	LC
ATU6KE	111.2	114.2	111.5	106.2	110.8	-0.68	10.5	3.3	109.6	-1.01	9.7	3.3	8	AH
BE4VBE	114.7	108.9	115.7	116.9	114.0	0.03	9.2	3.5	115.1	0.26	9.9	3.3	8	LC
BQZYGU	114.7	113.9	116.4	112.6	114.4	0.11	6.8	1.6	118.9	1.16	5.9	5.9	8	AH
CBLVTD	110.3	108.2	112.5	108.0	109.8	-0.90	8.3	2.1	112.0	-0.45	8.6	4.5	8	LA
D38NAF	124.5	117.8	121.7	121.9	121.5	1.64	7.0	2.8	123.7	2.28 *	10.0	4.0	8	LA
D4ZG6Y	112.7	114.1	108.2	121.9	114.2	0.07	9.2	5.7	115.4	0.34	10.3	4.2	8	AX
DK7J6R	114.3	113.0	114.1	111.9	113.3	-0.13	6.1	1.1	119.3	1.26	6.4	8.4	8	TP
EMTKNK	109.1	112.4	111.9	111.3	111.2	-0.60	8.5	1.5	112.1	-0.43	11.3	3.6	8	LA
FDVANA	117.7 H	120.4	124.5 H	121.6	121.1	1.55	14.3	2.8	118.6	1.08	12.5	3.4	8	LZ
FHTTTT	105.2	99.6 *	No DATA	No DATA	102.4	-2.50 *	14.1	4.0	102.6	-2.66 *	14.6	4.8	6	XX
GFH9JJ	124.4	121.0	122.1	120.7	122.0	1.77	9.6	1.7	120.0	1.41	9.5	3.7	8	LC
GFWY79	128.2 *	117.4	121.6	116.9	121.0	1.55	11.5	5.2	118.9	1.15	11.6	5.1	8	LZ
GTLYWB	115.2	126.5 *	127.5 *	121.7	122.7	1.91	9.1	5.6	119.8	1.37	9.4	5.3	8	LA
H4LLTE	118.0	115.0	112.0	109.0	113.5	-0.09	11.5	3.9	112.9	-0.24	10.1	4.7	8	AA
JFUNRG	112.6	110.9	112.0	111.8 L	111.8	-0.45	9.7	0.7 L	111.0	-0.69	10.9	2.0	8	LA
KHEZ28	115.4	112.4	116.8	124.3	117.2	0.72	11.1	5.1	116.3	0.54	12.6	3.7	8	LA
KJRMFE	111.0	107.9	113.3	111.5	110.9	-0.65	11.5	2.3	112.4	-0.35	11.2	3.2	8	LC
KM7367	114.5	107.2	105.9	110.6	109.6	-0.95	10.2	3.9	108.7	-1.23	10.1	3.3	8	LB
KYJKGA	110.1	120.4	118.0	113.6	115.5	0.35	8.4	4.6	115.7	0.41	10.5	3.6	8	XX
LKY4A4	122.0	122.9	118.9	111.1	118.7	1.05	10.0	5.3	117.0	0.71	10.3	4.4	8	AX



Containerboard Interlaboratory Testing Program
 Analysis 206
Bursting Strength (Mullen), 56 lb Linerboard - 56A1
 TAPPI Official Test Method T807

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
MNAWFM	114.6	111.6	115.4	112.0	113.4	-0.11	8.7	1.9	115.8	0.44	8.4	3.2	8	AA
MYRHM3	120.7	116.5	117.1	118.1	118.1	0.91	8.9	1.8	118.6	1.08	10.0	2.0	8	TB
NENTAA	103.3 *	100.4 *	110.0	102.3 *	104.0	-2.16 *	13.0	4.2	104.4	-2.22 *	12.2	3.6	8	AH
NMHZTE	110.6	109.9	106.7	111.9	109.8	-0.90	9.9	2.2	109.6	-1.03	10.2	2.1	8	LA
NRQJR8	108.4	113.3	111.3	117.3	112.6	-0.29	8.7	3.7	112.4	-0.35	8.3	3.8	8	LJ
PRMFE9	113.4	122.6	117.7	NO DATA	117.9	0.87	12.5	4.6	114.2	0.05	11.7	4.6	7	LJ
QDJAZ4	149.2 X	91.0 X	99.9 *	112.5	113.2	-0.17	9.5	25.6 H	113.2	-0.19	9.5	25.6 H	4	LA
T2E4YZ	112.0	111.0	103.5 H	115.0	110.4	-0.77	12.9	4.9	112.5	-0.35	11.7	4.6	8	LZ
T63HMB	115.4	120.6	113.4	114.0	115.9	0.42	8.6	3.3	116.1	0.50	7.5	2.7	8	RE
TCKQB8	122.9	113.1	115.3	118.6	117.5	0.77	9.5	4.3	114.3	0.07	9.4	6.2	8	TB
TLQVYG	117.2	120.6	111.6	110.6 L	115.0	0.24	6.9	4.7	115.3	0.31	7.3	3.2	8	AH
UGP7XZ	111.8	119.2 H	118.7	117.9	116.9	0.65	12.1	3.4	112.5	-0.35	11.7	6.5	8	LA
V38D89	114.0	121.0	112.7	116.2	116.0	0.45	10.3	3.6	113.5	-0.12	10.6	4.2	8	AH
VEZY9W	113.1	109.5	109.2	114.3	111.5	-0.52	9.8	2.6	113.0	-0.23	8.4	2.3	8	LA
VJBA4C	112.1	112.6	110.4	113.7	112.2	-0.38	8.9	1.4	112.6	-0.33	9.1	1.5	8	LA
X3WL63	109.0 H	111.3	104.5	107.3	108.0	-1.28	11.5	2.8	110.4	-0.82	12.1	5.6	8	LC
X62EY2	111.2	110.5	113.4	111.2	111.6	-0.51	10.1	1.3	109.6	-1.01	9.8	3.2	8	LC
XDGXEU	112.6	115.1	116.9	115.2	115.0	0.22	10.4	1.8	115.1	0.26	9.7	1.8	8	AH
Z84WB2	118.6	108.7	107.2	107.4	110.5	-0.75	12.2	5.5	112.6	-0.33	11.4	5.2	8	LC

Consensus (All Labs) Results														
Wk Mean	114.70	113.70	113.73	114.22	Month Mean	113.92			Grand Mean	113.95				
Avg SDr	10.42	9.94	10.23	9.97	Avg SDr	10.20			Avg SDr	10.30				
SD btwn Labs	5.38	5.63	5.83	5.05	SD btwn Labs	4.60			SD btwn Labs	4.28				
Labs Incl	53	52	53	51	SD btwn Wks	4.84			SD btwn Wks	5.35				
Labs Excl	1	2	0	0	Labs Incl	53			Labs Incl	53				
Labs not Rcvd	0	0	1	3										

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program
 Analysis 215
Ring Crush, 42 lb Linerboard - 42D2
 TAPPI Official Test Method T822

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
27QJ76	89.7	88.8	84.6	87.0	87.5	0.10	3.3	2.2	86.1	-0.20	3.4	2.4	8	EM
2KL69Q	82.8	81.9 L	82.9	81.0	82.1	-1.25	3.2	0.9	82.3	-1.03	4.7	3.7	8	LZ
3DGLM8	90.0	86.4	78.6	83.4	84.6	-0.63	4.5	4.8	82.8	-0.93	4.4	4.2	8	LD
44CTVR	85.0 H	82.8	87.4 H	93.4 H	87.2	0.01	8.6	4.6	88.9	0.41	7.7	5.0	8	LC
4NH9E4	90.0	88.7	90.1	88.9	89.4	0.59	2.5	0.7	90.9	0.84	2.9	1.6	8	WK
6VWGEK	97.0 *H	94.2	94.8	97.6 *	95.9	2.22 *	6.9	1.7	95.9	1.93	5.7	1.3	8	LC
7ZM928	81.9	82.4 H	82.2	82.3	82.2	-1.24	6.6	0.2 L	81.5	-1.19	6.3	1.7	8	LC
8RM94Q	86.1	86.1	86.1	86.1	86.1	-0.26	3.9	0.0 L	87.0	-0.01	4.4	1.0	8	LD
8VKR2H	85.7	90.6	91.7	90.6	89.7	0.64	3.9	2.7	88.9	0.41	3.6	2.0	8	LC
9HFTVX	91.0	92.5	90.0	86.7	90.1	0.75	4.7	2.5	89.1	0.44	3.9	2.9	8	LD
A3FCGJ	95.5	94.8	99.6 *H	90.6	95.1	2.02 *	9.4	3.7	93.6	1.42	7.6	3.2	8	LC
ATU6KE	91.6	88.4	91.7 L	87.9	89.9	0.71	3.9	2.0	89.4	0.52	4.1	1.6	8	EM
B7Q4M3	90.0	92.2	91.8	92.9	91.7	1.16	3.7	1.2	89.7	0.58	3.9	2.5	8	EM
BTQ3A2	80.2	84.7	83.1	82.5	82.6	-1.13	4.0	1.9	81.5	-1.21	3.7	2.3	8	EM
CBLVTD	89.7 L	89.5	89.7	87.9	89.2	0.53	2.9	0.9	89.8	0.61	2.9	1.2	8	LD
D2ADCR	91.0	89.9	89.6	91.6	90.5	0.86	3.4	0.9	91.7	1.02	3.1	1.5	8	LD
D38NAF	87.8	88.7 L	88.3 L	87.5 L	88.1	0.25	1.5	0.5 L	87.7	0.14	1.5	0.7	8	LZ
D4ZG6Y	90.3	80.5	90.0	93.5	88.6	0.37	4.1	5.6	89.8	0.61	4.2	4.6	8	LZ
DK7J6R	85.6	87.2	85.2	87.0	86.2	-0.22	3.6	1.0	86.5	-0.12	4.1	1.4	8	TH
EMTKNK	82.2	80.6	77.0	80.2	80.0	-1.79	2.9	2.2	80.8	-1.36	3.1	2.0	8	LD
FDVANA	83.5	81.5	85.4	87.4	84.4	-0.67	4.8	2.6	81.4	-1.22	4.3	3.8	8	LC
GFH9JJ	92.9	92.7	91.6	94.3	92.9	1.46	4.2	1.1	92.9	1.28	4.1	1.0	8	LC
GFY79	86.0	90.8	84.0	85.6 L	86.6	-0.13	3.6	2.9	85.6	-0.31	3.7	2.5	7	LC
GTLYWB	88.9	88.6	91.1	91.2	90.0	0.72	3.7	1.4	90.3	0.70	3.8	1.4	8	LZ
JFUNRG	83.7	84.9	86.5	84.9	85.0	-0.53	3.4	1.1	85.0	-0.44	3.4	1.1	4	LD
K8DRZF	83.4	84.9	82.0	83.5	83.4	-0.92	3.5	1.2	81.8	-1.14	3.6	2.8	8	LD
KJRMFE	89.8	86.8	86.0	85.7	87.1	-0.01	4.2	1.9	87.3	0.07	4.2	1.7	8	LD
KM7367	88.7	87.3	87.6	88.9	88.1	0.26	5.3	0.8	87.7	0.14	4.8	1.9	8	LC
LKY4A4	75.7 *H	73.8 XH	75.9 *H	70.7 X	74.0	-3.31 X	7.4	2.4	77.2	-2.13 *	6.1	10.9 H	8	LC
MNAWFM	83.3	86.7	84.7	84.6	84.8	-0.58	3.7	1.4	85.3	-0.38	3.5	1.2	8	LD
MYRHM3	99.1 *	97.9 *	101.0 *H	100.5 X	99.6	3.16 X	5.6	1.4	99.0	2.61 *	5.0	1.8	8	LX
NEKB84	91.5 L	95.7	93.1	90.3	92.6	1.39	4.3	2.3	92.1	1.09	3.4	1.7	8	LD
NENTAA	80.4	80.5	83.7	85.1	82.4	-1.18	4.0	2.3	83.9	-0.68	4.2	2.3	8	LD
NMHZTE	87.9	90.4	88.1	84.8 H	87.8	0.18	5.1	2.3	86.8	-0.05	4.5	2.7	8	LZ
NRQJR8	79.5	84.9	79.6	77.7 *	80.4	-1.69	3.7	3.1	79.5	-1.63	3.3	3.5	8	LC



Containerboard Interlaboratory Testing Program
 Analysis 215
Ring Crush, 42 lb Linerboard - 42D2
 TAPPI Official Test Method T822

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
PEUYLZ	83.9	84.9	84.6	82.8	84.0	-0.77	3.6	0.9	84.8	-0.48	3.9	1.3	8	MB
PFUYNL	82.5	84.3	81.8	84.2	83.2	-0.99	3.5	1.3	83.3	-0.82	3.4	1.5	8	EM
PP3AFK	88.1 L	88.4 L	86.6 L	88.2	87.8	0.18	2.0	0.8	92.5	1.19	2.6	5.0	8	TH
PRMFE9	86.0	86.1	90.2	82.8	86.3	-0.21	4.6	3.1	86.6	-0.08	4.3	2.6	8	LD
Q8TYQ6	76.9 *	77.2 *	76.0 *	77.3 *	76.9	-2.59 *	2.8	0.6	75.2	-2.57 *	2.7	1.9	8	MB
Q8WNTG	86.3	87.1	86.3	88.5	87.1	-0.01	3.6	1.0	88.2	0.26	5.1	1.9	8	TH
QDJAZ4	94.4	66.4 XH	90.5	92.3	85.9	-0.30	5.9	13.1 H	85.9	-0.25	5.9	13.1 H	4	LC
T63HMB	83.2	83.1	87.0	86.2	84.9	-0.56	3.3	2.0	83.0	-0.87	3.4	2.5	8	LZ
TCKQB8	85.2	90.6	88.3	87.1	87.8	0.18	3.3	2.3	87.7	0.14	3.8	1.8	8	LC
TDCPLY	82.5	83.1	81.9	81.6	82.3	-1.22	3.8	0.7	82.8	-0.93	4.0	1.3	8	EN
TLQVYG	89.8	90.2	89.8	88.0	89.4	0.59	4.1	1.0	89.0	0.42	3.9	1.0	8	LC
U3P6KY	81.9	83.8	82.6 L	79.8	82.0	-1.28	2.5	1.7	82.2	-1.04	2.7	1.5	8	EX
UWM62W	53.9 XL	54.4 XL	54.4 XL	54.5 X	54.3	-8.29 X	1.8	0.2 L	57.5	-6.42 X	1.5	3.5	8	XX
V38D89	80.8	84.3	88.6	80.4	83.5	-0.91	4.5	3.8	85.3	-0.39	4.8	4.6	8	LC
VEZY9W	89.7	91.3	88.9	86.6 L	89.1	0.51	3.8	1.9	89.5	0.54	4.5	1.5	8	LD
VJBA4C	93.4	92.5	91.3	91.5	92.2	1.28	3.2	1.0	93.7	1.46	3.2	2.1	8	LD
W34F8W	88.4	90.3	88.5	89.6	89.2	0.53	3.3	0.9	88.7	0.37	4.5	1.9	8	LD
X23ZCB	78.3	80.9	81.3	86.1	81.7	-1.38	4.2	3.3	81.1	-1.29	4.2	3.8	8	LC
X3WL63	89.3	89.4	91.3	92.0	90.5	0.86	3.7	1.4	90.6	0.77	4.3	1.0	8	LC
X62EY2	85.6	87.9	88.7	87.2	87.4	0.06	4.3	1.3	88.4	0.29	4.1	1.6	8	LD
XDGXEU	87.7	90.0	88.5	88.2	88.6	0.38	4.1	1.0	87.2	0.03	3.7	2.1	8	LD
Y7E6NB	91.2 L	90.4 L	90.6 L	92.9	91.2	1.04	1.5	1.1	91.9	1.05	1.8	1.9	8	TD
Y9G7N9	92.4	91.9	92.2 L	91.7	92.0	1.25	3.8	0.3 L	87.5	0.10	4.8	8.8 H	8	XX
ZEL6WD	81.6 H	94.3	99.1 *	95.4 H	92.6	1.39	6.7	7.6 H	93.0	1.31	6.6	5.8 H	8	MB

Consensus (All Labs) Results													
Wk Mean	86.84	87.61	87.40	87.20	Month Mean	87.11		Grand Mean	87.03				
Avg SDr	4.42	3.92	4.80	4.08	Avg SDr	4.29		Avg SDr	4.29				
SD btwn Labs	4.96	4.40	5.24	4.48	SD btwn Labs	3.96		SD btwn Labs	4.60				
Labs Incl	58	56	58	56	SD btwn Wks	2.91		SD btwn Wks	3.54				
Labs Excl	1	3	1	3	Labs Incl	56		Labs Incl	58				
Labs not Rcvd	0	0	0	0									



Containerboard Interlaboratory Testing Program
Analysis 215
Ring Crush, 42 lb Linerboard - 42D2
TAPPI Official Test Method T822

Report #564 (K)
September 2016

Key to Instrument Codes Reported by Participants

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
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



Containerboard Interlaboratory Testing Program
 Analysis 216
Ring Crush, 56 lb Linerboard - 56A1
 TAPPI Official Test Method T822

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
27QJ76	135.5	132.3	129.9	136.9	133.6	-0.30	5.9	3.2	133.5	-0.29	5.1	3.3	8	EM
2KL69Q	127.6	122.4	129.3	127.9	126.8	-1.44	4.2	3.0	130.5	-0.82	4.6	5.0	8	LZ
3DGLM8	143.2	136.5	120.9	133.9	133.6	-0.30	4.9	9.3 H	133.1	-0.36	4.9	8.0 H	8	LD
44CTVR	125.1 H	130.3 H	127.3 H	151.9 *	133.7	-0.30	14.8	12.4 H	140.9	1.02	11.4	11.6 H	8	LC
4NH9E4	131.4	130.1	133.2	131.1	131.5	-0.66	3.4	1.3	133.1	-0.36	3.1	2.1	8	WK
6VWGEK	145.6 H	147.6	153.3 *	148.2	148.7	2.21 *	8.0	3.3	142.0	1.22	6.6	8.0 H	8	LC
7ZM928	141.3	139.8	139.8	142.1	140.7	0.88	4.4	1.1	137.7	0.46	4.4	3.5	8	LC
8RM94Q	135.2 L	135.3	135.2	135.3	135.2	-0.03	4.7	0.0 L	133.7	-0.25	5.8	1.7	8	LD
8VKR2H	132.0 L	136.5	137.1	139.7	136.3	0.15	3.1	3.2	136.3	0.21	3.1	3.2	4	LC
9HFTVX	138.2	139.3	136.2	130.6	136.1	0.11	5.4	3.8	132.8	-0.40	4.6	6.1	8	LD
A3FCGJ	147.0	150.7 *	137.5	144.7	144.9	1.59	5.4	5.6	143.6	1.50	5.4	4.9	7	LC
ATU6KE	143.1	138.8	138.9	137.9	139.7	0.71	4.6	2.3	136.4	0.23	4.2	4.7	8	EM
B7Q4M3	142.8	139.4	142.9	140.6	141.4	1.00	4.1	1.7	141.9	1.20	5.1	1.8	8	EM
BTQ3A2	127.0	128.2	128.4	128.5	128.0	-1.24	5.2	0.7 L	127.0	-1.43	5.2	1.9	8	EM
CBLVTD	140.2	137.3 L	134.9	138.3	137.7	0.37	2.7	2.2	139.1	0.71	3.0	2.5	8	LD
D2ADCR	142.7	140.8	139.7	140.0	140.8	0.90	4.6	1.3	139.5	0.78	4.3	1.9	8	LD
D38NAF	136.7 L	137.6	137.9 L	135.4 L	136.9	0.25	2.2	1.1	141.0	1.05	3.6	4.6	8	LZ
D4ZG6Y	143.0	123.8	146.7 H	139.9	138.4	0.49	5.9	10.1 H	139.1	0.71	5.5	7.0	8	LZ
DK7J6R	133.1	133.2	130.9	133.4	132.6	-0.47	2.9	1.1	132.3	-0.50	3.9	1.9	8	TH
EMTKNK	129.4	129.6	129.1	131.2	129.8	-0.94	5.0	0.9	130.8	-0.76	4.9	2.2	8	LD
FDVANA	127.9	124.4	131.4	134.9	129.6	-0.97	4.7	4.5	129.1	-1.07	4.8	4.6	8	LC
GFH9JJ	142.7	142.3	144.2	140.8	142.5	1.18	4.2	1.4	144.0	1.57	4.6	2.2	8	LC
GFWY79	136.9	133.1	131.8	134.8	134.1	-0.22	5.4	2.2	133.5	-0.29	4.6	2.7	8	LY
GTLYWB	136.6	137.1	139.8	141.6	138.8	0.56	3.8	2.4	139.4	0.76	4.8	2.2	8	LZ
JFUNRG	132.9	134.5	132.8	134.3	133.6	-0.30	4.6	0.9	134.6	-0.10	4.2	1.3	8	LD
K8DRZF	130.8	130.1	128.7	131.9	130.4	-0.85	4.6	1.3	130.1	-0.89	4.3	1.4	8	LD
KJRMFE	134.7	135.2	133.6	136.5	135.0	-0.07	3.9	1.2	134.6	-0.10	4.5	1.3	8	LD
KM7367	134.8	134.1	134.6	133.2	134.2	-0.21	4.4	0.7 L	135.3	0.03	4.6	2.7	8	LC
LKY4A4	116.8 *H	109.4 XH	110.6 XH	108.7 XH	111.4	-4.02 X	11.6	3.7	121.1	-2.47 *	12.6	11.7 H	8	LC
MNAWFM	132.6	132.0	131.5	132.5	132.2	-0.55	4.4	0.5 L	130.1	-0.89	4.1	2.3	8	LD
MYRHM3	156.0 *	154.2 *	155.1 *	161.9 X	156.8	3.57 X	5.5	3.5	154.7	3.47 X	5.7	3.2	8	LX
NEKB84	141.3	136.6	141.9	139.4	139.8	0.73	5.2	2.4	139.9	0.85	4.9	2.3	8	LD
NENTAA	123.5	125.1	128.3	132.5	127.3	-1.35	5.2	4.0	130.4	-0.83	4.7	4.2	8	LD
NMHZTE	133.0	136.0	138.6	138.9	136.6	0.20	4.1	2.7	136.2	0.19	5.6	4.9	8	LZ
NRQJR8	124.1	132.7	126.4	117.1 XH	125.1	-1.73	5.3	6.5	123.3	-2.09 *	4.5	5.5	8	LC



Containerboard Interlaboratory Testing Program
 Analysis 216
Ring Crush, 56 lb Linerboard - 56A1
 TAPPI Official Test Method T822

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
PEUYLZ	120.4 H	126.6	120.3 *H	125.5 H	123.2	-2.05 *	10.3	3.3	123.2	-2.11 *	10.3	3.3	4	MB
PFUYNL	128.2	131.1	132.8	133.7	131.5	-0.66	3.4	2.4	132.5	-0.47	3.3	2.5	8	EM
PP3AFK	135.5	134.6	134.8	136.2	135.3	-0.03	3.2	0.7 L	137.7	0.46	4.2	2.7	8	TH
PRMFE9	139.4	137.7	135.7	132.3	136.3	0.14	4.2	3.0	136.3	0.21	4.2	3.0	4	LD
Q8TYQ6	122.4	120.4 *	123.0	124.7 *	122.6	-2.14 *	3.0	1.8	116.7	-3.25 X	4.1	6.5	8	MB
Q8WNTG	136.2	135.5	133.4	134.6	134.9	-0.09	4.7	1.2	134.8	-0.05	5.0	2.2	8	TH
QDJAZ4	109.7XH	145.0	145.9	147.2	137.0	0.25	6.3	18.2H	137.0	0.33	6.3	18.2H	4	LC
T63HMB	130.1	132.5	131.4	133.3	131.8	-0.60	3.9	1.4	130.7	-0.78	3.6	1.6	8	LZ
TCKQB8	139.7	143.6	141.7 L	144.8	142.5	1.17	5.1	2.2	141.1	1.05	5.7	3.2	8	LC
TDCPLY	125.5	128.5	128.5	132.1	128.7	-1.13	3.9	2.7	128.9	-1.10	3.7	2.0	8	EN
TLQVYG	134.4	139.7 L	140.2	136.3	137.6	0.37	3.5	2.8	138.0	0.51	3.9	3.2	8	LC
U3P6KY	129.7	129.9 L	128.3	128.3	129.1	-1.06	3.3	0.9	128.8	-1.11	3.4	2.0	8	EX
UWM62W	100.2 X	99.8 XL	99.7 XL	99.1 XL	99.7	-5.97 X	1.7	0.5 L	101.7	-5.91 X	2.3	2.2	8	XX
V38D89	133.6	127.9	131.4	137.3	132.5	-0.48	6.5	4.0	130.0	-0.91	6.3	3.9	8	LC
VEZY9W	143.1	141.4	142.3	139.8	141.7	1.04	2.8	1.4	136.5	0.25	2.6	5.7	8	LD
VJBA4C	148.5	150.0	149.9 L	150.4 *	149.7	2.38 *	3.3	0.9	148.3	2.33 *	3.9	1.7	8	LD
W34F8W	141.2	136.7	139.0	138.6 L	138.9	0.58	3.5	1.8	134.9	-0.04	2.9	4.5	8	LD
X23ZCB	123.4	125.9	127.7	136.6	128.4	-1.17	5.9	5.7	128.3	-1.21	5.3	4.3	8	LC
X3WL63	143.5	139.8	139.3	140.6	140.8	0.90	3.9	1.9	140.1	0.88	4.3	1.7	8	LC
X62EY2	135.0	135.2	132.8	138.6	135.4	-0.01	4.2	2.4	138.6	0.62	4.7	3.8	8	LD
XDGXEU	132.1	134.1	135.5	137.5	134.8	-0.11	5.3	2.3	133.4	-0.31	4.8	2.3	8	LD
Y7E6NB	133.0	137.4	134.6	134.6	134.9	-0.09	4.0	1.9	134.4	-0.13	3.4	1.8	8	TD
Y9G7N9	139.5	145.5	140.6	146.2	142.9	1.25	4.6	3.4	139.9	0.85	4.5	5.2	7	XX
ZEL6WD	148.4	152.0 *	148.0	145.3	148.4	2.17 *	5.5	2.8	147.3	2.15 *	5.5	2.2	8	MB

Consensus (All Labs) Results												
Wk Mean	135.21	135.58	135.53	136.96	Month Mean	135.44		Grand Mean	135.11			
Avg SDr	5.44	5.28	5.03	4.62	Avg SDr	5.10		Avg SDr	5.20			
SD btwn Labs	7.84	7.34	7.35	5.89	SD btwn Labs	5.99		SD btwn Labs	5.66			
Labs Incl	57	57	57	55	SD btwn Wks	4.30		SD btwn Wks	4.86			
Labs Excl	2	2	2	4	Labs Incl	56		Labs Incl	56			
Labs not Rcvd	0	0	0	0								



Containerboard Interlaboratory Testing Program
Analysis 216
Ring Crush, 56 lb Linerboard - 56A1
TAPPI Official Test Method T822

Report #564 (K)
September 2016

Key to Instrument Codes Reported by Participants

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	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		



Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D2

TAPPI Provisional Test Method T826

Report #564 (K)

September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
27QJ76	22.0	22.5	23.4	22.3	22.6	0.33	1.8	0.6	22.5	0.25	1.9	0.7	8	LZ
28YXBP	23.8	21.9	21.6	22.3	22.4	0.20	1.8	1.0	22.7	0.38	1.9	0.8	8	LU
2KL69Q	21.8	21.4	21.8	21.2	21.5	-0.64	1.7	0.3	21.5	-0.71	1.7	0.4	8	LZ
44CTVR	22.9	23.6	22.5	22.9	23.0	0.73	1.8	0.5	23.8	1.40	1.9	1.1	8	LU
4NH9E4	22.7	22.7	23.2	23.0	22.9	0.66	0.9	0.3	23.2	0.86	1.1	0.5	8	LZ
6VWGEK	18.6 XL	21.3 L	20.5 L	20.4 L	20.2	-1.90	0.0	1.2	20.2	-1.81	0.0	1.0	8	LW
6X2346	21.4 L	23.8 L	21.5 L	22.1 L	22.2	0.01	0.4	1.1	21.7	-0.49	0.4	1.0	8	LA
72Y3JT	22.9	22.6	23.3	23.2	23.0	0.76	2.5	0.4	22.8	0.46	2.3	0.6	8	LW
7CVC3V	23.1	22.9	22.7	22.3	22.8	0.53	1.6	0.3	22.5	0.20	1.7	0.4	8	LU
7ZM928	21.5	20.6	23.3	21.3	21.7	-0.51	1.7	1.2	21.6	-0.61	1.9	0.9	8	LU
8VKR2H	21.0	20.0	21.6	21.4	21.0	-1.14	1.4	0.7	21.0	-1.10	1.4	0.7	8	LA
9HFTVX	22.3	21.9	21.4	21.7	21.8	-0.37	1.7	0.4	22.1	-0.08	2.1	0.8	8	LZ
A3FCGJ	21.2 L	24.3 L	42.0 X	21.8 L	27.3	4.89 X	1.2	9.9 H	26.8	4.11 X	1.0	7.1 H	8	LA
BE4VBE	24.1	25.1 *	24.3	24.8 X	24.6	2.25 *	2.0	0.5	24.4	1.98	2.1	0.6	8	LA
BQZYGU	22.5	22.4	22.0	22.6	22.4	0.17	1.0	0.2	22.2	-0.01	1.0	0.3	8	TT
CBLVTD	22.1	21.4	22.2	21.2	21.7	-0.44	1.1	0.5	21.8	-0.42	1.2	0.4	8	BK
CCBJTK	23.1 L	22.1 L	23.3 L	25.7 XL	23.6	1.30	0.5	1.5 H	23.4	1.06	0.5	1.1	8	LA
D2ADCR	22.0	22.0	21.6	22.3	22.0	-0.22	1.8	0.3	21.8	-0.40	1.7	0.3	8	LY
DK7J6R	22.0	22.1	22.3	21.9	22.1	-0.13	0.9	0.2	22.2	-0.06	0.9	0.2	8	TT
EMTKNK	19.0 X	19.6 *	20.4	20.4	19.8	-2.25 *	1.7	0.7	19.5	-2.49 *	1.7	0.6	8	LY
FDVANA	21.1	21.3	22.8	21.8	21.8	-0.43	2.1	0.8	22.5	0.24	2.0	3.9 H	8	LW
GFH9JJ	23.7 L	23.4 L	23.3 L	25.8 XL	24.0	1.75	0.0	1.2	24.2	1.73	0.0	1.1	8	LA
GFWY79	22.2	22.5	22.1	22.3	22.2	0.05	2.0	0.2	22.1	-0.15	1.9	0.4	7	LW
GTLYWB	21.1	21.3	21.2	21.7	21.3	-0.84	1.8	0.2	21.3	-0.85	1.7	0.4	8	LW
JFUNRG	22.4	22.2	21.6	21.1	21.8	-0.36	1.6	0.6	22.1	-0.10	1.5	0.9	8	LW
K8DRZF	21.3	21.8	22.1	21.0	21.5	-0.63	1.8	0.5	21.5	-0.62	1.8	0.4	8	LY
KJRMFE	22.6 L	21.6	21.4	23.6	22.3	0.09	1.4	1.0	22.6	0.31	2.0	0.9	8	LA
KM7367	22.0	22.1	22.4	22.7	22.3	0.09	1.7	0.3	22.2	-0.03	1.6	0.3	8	LU
KYJKGA	23.6	23.7	23.3	22.9	23.4	1.13	1.8	0.4	23.9	1.54	1.9	0.7	8	XX
LKY4A4	21.6	19.2 *	19.4 *	19.5 *	20.0	-2.13 *	1.8	1.1	20.2	-1.88	1.8	1.1	8	XX
LXKJD4	20.4 L	20.5 L	21.0 L	21.6 L	20.9	-1.27	0.0	0.6	20.6	-1.50	0.0	0.9	8	LW
MNAWFM	21.0	20.8	20.5	19.8 *	20.5	-1.58	1.8	0.5	20.7	-1.43	1.8	0.4	8	LW
NEKB84	22.4	22.9	23.4	22.5	22.8	0.56	1.7	0.5	22.7	0.41	1.8	0.8	8	LY
NENTAA	20.9	20.6	21.3	21.7	21.1	-1.04	1.8	0.5	21.3	-0.82	1.9	0.5	8	LY
NMHZTE	21.0 L	22.7 L	22.2 L	22.6 L	22.1	-0.06	0.4	0.8	21.7	-0.50	0.4	0.8	8	LA



Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D2

TAPPI Provisional Test Method T826

Report #564 (K)

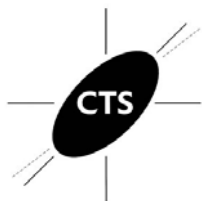
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
PEUYLZ	23.3 L	24.1 L	24.8 *L	23.1 L	23.8	1.54	0.4	0.8	23.7	1.30	0.4	0.6	8	BK
PRMFE9	25.4 XL	22.9 L	22.1 L	No DATA	23.5	1.22	0.0	1.7 H	23.1	0.82	0.0	1.3	6	LU
QF8NND	21.4	19.9	21.9	21.2	21.1	-1.06	1.6	0.9	21.4	-0.76	1.7	0.7	8	XX
T2E4YZ	23.3	22.8	23.5	22.5	23.0	0.79	2.3	0.5	23.6	1.19	2.1	0.8	8	LZ
TCKQB8	22.9	22.3	23.2	22.9	22.8	0.58	2.4	0.4	22.6	0.28	2.2	0.5	8	LW
TDCPLY	19.8 *	20.1	20.8	20.6	20.3	-1.78	1.7	0.5	20.3	-1.75	1.8	0.4	8	LY
TLM7W6	21.6	22.2	22.8	22.4	22.3	0.07	1.8	0.5	22.3	0.03	1.8	0.5	4	LW
TLQVYG	21.9	21.0	22.9	21.7	21.9	-0.32	2.0	0.8	22.0	-0.23	2.0	0.6	8	LU
UGP7XZ	26.0 X	23.8	23.8	23.0	24.2	1.86	2.2	1.3	24.7	2.25 *	2.2	1.1	8	LU
V38D89	23.3	22.7	22.7	22.6	22.8	0.59	1.0	0.3	22.6	0.32	1.2	0.7	8	LY
VJBA4C	22.4	23.2	23.8	23.2	23.2	0.91	1.4	0.6	23.4	1.08	1.5	0.5	8	LA
X3WL63	23.1 L	22.5 L	No DATA	21.3 L	22.3	0.10	0.4	0.9	22.3	0.05	0.4	0.6	7	LA
X62EY2	21.8	22.8	22.4	22.2	22.3	0.10	1.2	0.4	22.3	0.03	1.7	0.3	8	LA
XDGXEU	21.3	22.5	22.1	22.1	22.0	-0.21	2.0	0.5	22.1	-0.15	2.0	0.6	8	LU
Y9G7N9	23.2 L	22.2 L	22.9 L	22.4 L	22.7	0.46	0.1	0.5	22.6	0.29	0.1	0.5	8	XX
Z84WB2	23.3	22.2	22.5	21.5	22.4	0.16	2.0	0.7	22.6	0.30	1.8	0.9	8	LA
ZEL6WD	21.9 L	23.0 L	23.2 L	22.1 L	22.6	0.34	0.1	0.6	22.5	0.19	0.1	0.6	8	LA

Consensus (All Labs) Results									
Wk Mean	22.17	22.13	22.33	21.95	Month Mean	22.20	Grand Mean	22.24	
Avg SDr	1.53	1.60	1.58	1.58	Avg SDr	1.57	Avg SDr	1.59	
SD btwn Labs	0.97	1.24	1.08	0.90	SD btwn Labs	1.05	SD btwn Labs	1.11	
Labs Incd	48	52	50	48	SD btwn Wks	0.73	SD btwn Wks	0.89	
Labs Excl	4	0	1	3	Labs Incd	51	Labs Incd	51	
Labs not Rcvd	0	0	1	1					

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 56 lb Linerboard - 56A1

TAPPI Provisional Test Method T826

Report #564 (K)

September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
27QJ76	32.1	35.9	35.1	33.3	34.1	0.51	2.6	1.7	33.6	0.13	2.7	1.3	8	LZ
28YXBP	35.9 *	36.4	33.2	32.8	34.6	0.79	2.8	1.8	34.3	0.58	3.3	1.6	7	LU
2KL69Q	32.2	32.6	32.4	33.9	32.8	-0.33	2.9	0.8	32.7	-0.37	2.7	0.8	8	LZ
44CTVR	33.4	34.4	36.3	35.7	34.9	1.03	2.8	1.3	35.6	1.33	3.1	1.4	8	LU
4NH9E4	33.5	33.1	33.9	33.7	33.5	0.17	1.8	0.3	34.5	0.68	1.9	1.1	8	LZ
6VWGEK	31.4 L	32.4 L	31.9 L	32.6 L	32.1	-0.75	0.0	0.5	31.8	-0.90	0.0	1.3	8	LW
6X2346	31.3 L	34.5 L	32.0 L	31.1 L	32.2	-0.66	0.7	1.6	32.4	-0.54	0.7	1.2	8	LA
72Y3JT	33.8	34.5	34.0	34.5	34.2	0.57	3.0	0.4	34.3	0.56	3.5	0.5	8	LW
7CVC3V	33.1	34.4	32.8	33.2	33.4	0.07	2.6	0.7	33.5	0.11	2.7	0.8	8	LU
7ZM928	33.7	33.5	34.4	33.1	33.7	0.24	2.1	0.5	33.1	-0.14	2.5	0.8	8	LU
8VKR2H	30.5	31.5	33.5	32.1	31.9	-0.86	2.6	1.3	31.9	-0.82	2.6	1.3	4	LA
9HFTVX	33.2	33.1	32.3	33.0	32.9	-0.24	2.4	0.4	32.1	-0.70	2.2	1.5	8	LZ
A3FCGJ	35.1	35.1 L	48.8 X	35.4	38.6	3.30 X	1.7	6.8 H	36.6	1.89	1.4	5.0 H	8	LA
BE4VBE	38.8 X	35.5	38.2 *	36.0	37.1	2.38 *	2.8	1.6	37.2	2.21 *	3.2	1.4	8	LA
BQZYGU	33.8	33.6	32.8 L	33.2 L	33.3	0.03	1.1	0.4	32.1	-0.72	1.3	1.4	8	TT
CBLVTD	32.7	33.2 L	31.3 L	33.6	32.7	-0.36	1.4	1.0	32.7	-0.33	1.6	0.9	8	BK
CCBJTK	33.1	36.0 L	36.5 L	36.8	35.6	1.43	1.0	1.7	35.5	1.25	1.3	1.8	8	LA
D2ADCR	33.0	32.4	31.9	32.0	32.3	-0.61	2.6	0.5	32.0	-0.74	2.6	0.7	8	LY
DK7J6R	32.6	32.4 L	33.1	33.4	32.9	-0.26	1.3	0.5	31.8	-0.89	1.5	1.2	8	TT
EMTKNK	30.5	30.8	30.6	29.7 *	30.4	-1.80	2.0	0.5	30.5	-1.63	2.2	0.5	8	LY
FDVANA	31.0	31.1	32.8	33.2	32.0	-0.80	3.1	1.1	32.4	-0.52	2.9	0.9	8	LW
GFH9JJ	34.1 L	36.9 L	37.7 *L	36.4 L	36.3	1.85	0.0	1.6	36.5	1.82	0.0	1.1	8	LA
GFWY79	32.5	30.8	33.4	33.6	32.6	-0.44	2.6	1.3	32.2	-0.64	2.4	1.0	8	LW
GTLYWB	31.9	32.5	31.8	31.5	31.9	-0.85	2.5	0.4	32.3	-0.58	2.9	0.7	8	LW
JFUNRG	33.9	33.3	33.9	33.7	33.7	0.25	2.8	0.3	33.1	-0.15	2.6	0.8	8	LW
K8DRZF	32.4	32.4	33.4	33.4	32.9	-0.24	2.7	0.6	32.5	-0.45	2.8	1.0	8	LY
KJRMFE	31.2	33.3	31.4	35.1	32.7	-0.34	2.6	1.8	33.7	0.22	2.2	1.7	8	LA
KM7367	31.8	32.4	31.7	32.3	32.1	-0.76	2.7	0.4	32.5	-0.48	2.6	0.7	8	LU
KYJKGA	33.3	37.2	36.3	35.6	35.6	1.44	3.0	1.7	36.3	1.70	3.0	1.4	8	LU
LKY4A4	31.1	29.2 *	29.9	28.7 *	29.7	-2.19 *	2.4	1.0	29.7	-2.06 *	2.4	1.0	4	XX
LXKJD4	32.3 L	31.6 L	29.7 L	30.4 L	31.0	-1.41	0.0	1.2	30.8	-1.44	0.0	1.3	8	LW
MNAWFM	31.9	30.9	31.6	30.7	31.3	-1.26	3.0	0.6	30.9	-1.42	2.8	0.6	8	LW
NEKB84	34.1	33.4	34.8	34.1	34.1	0.52	2.9	0.6	33.2	-0.05	2.9	1.1	8	LY
NENTAA	31.0	30.7	32.7	31.7	31.5	-1.09	2.9	0.9	32.0	-0.78	2.6	0.8	8	LY
NMHZTE	33.6 L	32.7 L	32.6 L	32.8	32.9	-0.21	0.9	0.5	35.3	1.15	0.9	5.6 H	8	LA



Containerboard Interlaboratory Testing Program
Analysis 224

Report #564 (K)
September 2016

STFI, 56 lb Linerboard - 56A1
TAPPI Provisional Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
PEUYLZ	33.8 L	34.9 L	35.2 L	37.1 *L	35.3	1.23	0.8	1.4	35.3	1.12	0.8	1.4	4	BK
PRMFE9	37.3 XL	34.0 L	34.1 L	No DATA	35.1	1.14	0.0	1.9	33.7	0.20	0.0	1.9	7	LU
QF8NND	33.0	31.0	34.1	32.1	32.5	-0.47	2.9	1.3	31.7	-0.91	2.9	2.0	8	XX
T2E4YZ	37.3 X	37.8 *	35.9	36.2	36.8	2.18 *	3.1	0.9	36.0	1.52	3.3	1.7	8	LZ
TCKQB8	32.9	34.0	32.4	32.9	33.1	-0.14	2.8	0.7	33.4	0.05	2.9	0.9	8	LW
TDCPLY	30.3	30.5	30.7	31.3	30.7	-1.62	2.7	0.4	30.9	-1.41	2.5	0.5	8	LY
TLM7W6	32.5	31.3	33.4	32.3	32.4	-0.57	2.3	0.9	32.2	-0.65	2.1	0.9	8	LW
TLQVYG	32.0	34.6	32.3	33.0	33.0	-0.20	2.5	1.2	32.8	-0.29	2.5	0.9	8	LU
UGP7XZ	36.6 X	32.5	35.7	35.0	34.9	1.02	2.8	1.8	36.4	1.75	2.9	2.2	8	LU
V38D89	32.8	37.1	36.0	34.7	35.2	1.16	2.0	1.9	34.9	0.90	2.1	1.8	8	LY
VJBA4C	34.2	34.6	33.7	34.0	34.1	0.52	2.5	0.4	34.5	0.69	2.5	0.6	8	LA
X3WL63	32.7 L	32.0 L	28.7 *	33.9 L	31.8	-0.91	1.1	2.2	32.4	-0.52	0.9	1.7	8	LA
X62EY2	32.3	34.7	33.5	33.4	33.5	0.11	2.7	1.0	33.7	0.24	2.6	0.9	8	LA
XDGXEU	31.5	31.0	32.4	31.7	31.7	-1.01	2.4	0.6	31.6	-1.00	2.8	0.6	8	LU
Y9G7N9	34.1 L	35.9 L	33.2 L	34.9 L	34.5	0.78	0.1	1.1	34.0	0.40	0.1	1.0	8	XX
Z84WB2	34.2	33.5	35.7	32.2	33.9	0.37	3.8	1.4	33.5	0.10	3.1	1.2	8	LA
ZEL6WD	No DATA	34.2 L	34.5 L	33.9 L	34.2	0.56	0.1	0.3	34.2	0.52	0.1	1.3	7	LA

Consensus (All Labs) Results									
Wk Mean	32.70	33.40	33.35	33.35	Month Mean	33.28	Grand Mean	33.32	
Avg SDr	2.31	2.35	2.40	2.32	Avg SDr	2.35	Avg SDr	2.37	
SD btwn Labs	1.24	1.97	1.99	1.78	SD btwn Labs	1.61	SD btwn Labs	1.74	
Labs Includ	47	52	51	51	SD btwn Wks	1.13	SD btwn Wks	1.58	
Labs Exclcd	4	0	1	0	Labs Includ	51	Labs Includ	52	
Labs not Rcvd	1	0	0	1					

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program
 Analysis 228
Roughness - Stylus Method, 56 lb Linerboard - 56A
 TAPPI Provisional Test Method T575

Report #564 (K)
September 2016

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
44CTVR	140.7	-1.51	11.6	143.7	-1.40	16.7	4	LA
6VWGEK	176.4	-0.15	18.6	181.3	0.52	18.2	4	EV
6X2346	170.3	-0.39	13.7	154.0	-0.87	11.7	4	EV
9HFTVX	210.0	1.12	24.8	187.0	0.81	22.2	3	LA
A3FCGJ	178.0	-0.09	13.2	173.7	0.14	18.7	4	LA
FDVANA	164.1	-0.62	14.8	167.6	-0.18	16.4	4	EV
GFH9JJ	173.1	-0.28	17.9	166.9	-0.21	17.7	4	LA
GTLYWB	206.5	0.99	14.6	187.8	0.85	14.2	4	EV
JFUNRG	203.6	0.88	20.9	174.1	0.15	22.6	4	EV
NENTAA	141.5	-1.48	11.1	142.0	-1.48	13.1	4	EV
NMHZTE	227.1	1.77	16.1	187.1	0.81	14.9	4	EV
PEUYLZ	213.1	1.24	21.1	180.9	0.50	20.5	3	EV
T2E4YZ	170.3	-0.39	21.5	166.6	-0.23	19.8	4	XX
TDCPLY	179.2	-0.05	22.9	156.1	-0.76	15.9	4	EV
UGP7XZ	184.6	0.16	8.6	185.2	0.72	15.8	4	EV
UJFBQ8	160.8	-0.75	16.7	158.0	-0.67	12.8	3	EV
V38D89	134.7	-1.74	17.1	132.3	-1.97	14.1	4	EV
VJBA4C	152.3	-1.07	17.0	149.9	-1.08	17.0	4	XX
X3WL63	208.6	1.07	17.2	210.5	2.01 *	24.0	4	LA
XDGXEU	202.2	0.83	27.3	186.2	0.77	18.7	4	EV
Y9G7N9	210.4	1.14	29.1	200.8	1.51	26.3	4	EV
Z84WB2	153.1	-1.04	14.9	159.0	-0.62	18.2	4	LA
ZEL6WD	189.8	0.35	22.6	184.4	0.68	23.4	4	LA

Consensus (All Labs) Results			
Month Mean	180.46	Grand Mean	171.09
Avg SDr	18.67	Avg SDr	18.35
SD btwn Labs	26.34	SD btwn Labs	19.63
Labs Incd	23	Labs Incd	23

Key to Instrument Codes Reported by Participants

- EV Emveco Microgag Model 210-R
- LA L&W Autoline
- XX Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 229
Roughness - Sheffield Method, 42 lb Linerboard - 42D2
 TAPPI Provisional Test Method T538

Report #564 (K)
September 2016

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
6FJ4Y8	365.9	0.35	7.9	365.9	-0.39	7.9	1	XX
7T39LU	365.7	0.31	9.7	372.5	1.15	6.9	4	XX
CCBJTK	357.8	-1.65	5.4	361.8	-1.36	5.6	3	XX
D4ZG6Y	364.4	-0.02	8.4	372.3	1.11	7.5	4	XX
KJRMFE	363.0	-0.37	8.4	364.8	-0.65	7.7	4	XX
TLQVYG	370.1	1.39	5.4	368.1	0.13	6.5	4	XX
X62EY2	434.2	17.21 X	0.6	439.7	16.93 X	0.9	4	XX

Consensus (All Labs) Results				
Month Mean	364.48		Grand Mean	367.56
Avg SDr	7.70		Avg SDr	7.07
SD btwn Labs	4.05		SD btwn Labs	4.26
Labs Incd	6		Labs Incd	6

Key to Instrument Codes Reported by Participants

XX Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 231
Internal Bond, 36 lb Linerboard - 36Z
 TAPPI Provisional Test Method T569

Report #564 (K)
September 2016

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
44CTVR	138.8	-0.67	8.7	147.5	-0.41	7.9	4	TM
4J24G9	161.6	0.04	3.8	161.1	0.01	5.0	4	TM
6VWGEK	205.0	1.40	15.8	219.0	1.81	12.4	4	SC
7ZM928	162.4	0.07	0.9	162.2	0.05	6.9	4	XX
8VKR2H	148.4	-0.37	8.1	170.9	0.32	9.7	3	TM
CCBJTK	155.8	-0.14	5.8	153.8	-0.22	7.6	3	SC
JFUNRG	211.8	1.61	16.3	207.6	1.46	11.6	3	HY
LKY4A4	118.7	-1.30	3.2	119.3	-1.29	6.3	3	SC
MNAWFM	176.4	0.51	6.2	178.0	0.54	6.4	4	TM
NENTAA	165.0	0.15	9.0	155.0	-0.18	15.2	4	XX
NMHZTE	173.6	0.42	4.4	168.5	0.24	6.5	3	TM
PRMFE9	152.6	-0.24	9.6	151.5	-0.29	15.9	3	HZ
T2E4YZ	150.8	-0.29	9.2	151.7	-0.28	11.1	4	TM
TLQVYG	183.7	0.73	4.4	182.5	0.68	4.9	4	HY
UGP7XZ	124.8	-1.10	5.8	125.8	-1.09	11.3	4	TM
VEZY9W	171.3	0.35	9.3	174.3	0.42	5.8	4	SC
X3WL63	205.6	1.42	6.5	194.2	1.04	13.3	4	HY
X62EY2	84.0	-2.38 *	1.3	81.7	-2.46 *	1.4	4	LZ
XDGXEU	155.6	-0.14	4.0	150.9	-0.31	7.3	4	TM

Consensus (All Labs) Results			
Month Mean	160.19	Grand Mean	160.73
Avg SDr	8.27	Avg SDr	9.64
SD btwn Labs	32.03	SD btwn Labs	32.11
Labs Incl	18	Labs Incl	18

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	161.20	24.31	1.01	15
Modified Scott Bond Mechanics	197.74	19.88	37.55	2

Analysis Notes

7ZM928 - Data appears to be off by 1,000. Data corrected by CTS.



Containerboard Interlaboratory Testing Program
Analysis 231
Internal Bond, 36 lb Linerboard - 36Z
TAPPI Provisional Test Method T569

Report #564 (K)
September 2016

Key to Instrument Codes Reported by Participants

HY	Huygen Digitized Scott Internal Bond Tester	HZ	Huygen Internal Bond Tester with AccuPress
LZ	L&W (model not specified)	SC	Scott Internal Bond Tester (Manual)
TM	TMI Monitor/Internal Bond Tester	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 234
COF Inclined Plane (Slide Angle), 36 lb Linerboard - 36Z
 TAPPI Official Test Method T815

Report #564 (K)
September 2016

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SDr	Mean	CPV	SDr	Months
27QJ76	27.4	-0.07	1.7	26.7	-0.29	2.0	4
44CTVR	25.6	-0.74	0.9	26.2	-0.57	3.5	4
6VWGEK	30.2	0.97	1.3	27.4	0.12	2.2	4
7CVC3V	27.0	-0.22	0.8	27.5	0.18	1.0	4
CCBJTK	28.2	0.22	1.9	27.9	0.41	1.7	3
FDVANA	26.2	-0.52	2.9	26.5	-0.41	2.0	4
JFUNRG	26.6	-0.37	1.1	25.3	-1.03	0.9	3
KYJKGA	25.8	-0.67	1.5	25.5	-0.94	1.7	4
MNAWFM	26.0	-0.59	1.7	25.1	-1.19	3.1	4
NENTAA	27.0	-0.22	1.0	28.1	0.51	1.5	4
NMHZTE	33.0	2.01 *	2.3	30.5	1.82	2.2	4
QDJAZ4	29.8	0.82	3.5	29.8	1.46	3.5	1
T2E4YZ	26.6	-0.37	3.4	27.6	0.20	3.1	4
T7W4G2	28.8	0.45	2.0	29.4	1.22	1.4	4
TCKQB8	25.4	-0.82	4.2	25.3	-1.08	2.6	4
TDCPLY	24.2	-1.27	1.3	26.6	-0.31	1.8	4
TLQVYG	24.0	-1.34	1.2	24.7	-1.42	1.1	4
UGP7XZ	26.0	-0.59	0.7	27.1	-0.08	2.2	4
VJBA4C	26.4	-0.45	1.3	25.3	-1.05	1.5	4
X62EY2	33.8	2.30 *	0.8	30.8	2.01 *	0.8	4
XDGXEU	31.6	1.49	0.5	28.0	0.44	1.7	4

Consensus (All Labs) Results			
Month Mean	27.60	Grand Mean	27.19
Avg SDr	1.98	Avg SDr	2.13
SD btwn Labs	2.69	SD btwn Labs	1.79
Labs Incl	21	Labs Incl	21

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Containerboard Interlaboratory Testing Program
Analysis 237

Report #564 (K)
September 2016

Air Resistance, 36 lb Linerboard - 36Z

TAPPI Official Test Method T460

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
3DGLM8	50.9	-0.69	2.6	49.1	-1.57	3.1	4	GG
44CTVR	52.1	-0.12	2.0	52.6	0.45	1.7	4	LA
6VWGEK	52.8	0.25	2.2	52.2	0.20	2.5	4	HG
8XAWYW	53.5	0.59	1.7	53.2	0.82	2.0	4	XX
A3FCGJ	49.7	-1.27	1.9	50.3	-0.88	2.8	4	LA
D2ADCR	50.6	-0.84	1.7	50.0	-1.04	1.4	4	LP
D38NAF	54.7	1.18	2.7	49.9	-1.10	2.4	4	XX
GFH9JJ	50.5	-0.87	2.5	52.0	0.12	3.3	4	TL
JFUNRG	57.3	2.47 *	2.4	53.7	1.07	2.4	4	LP
KYJKGA	43.1	-4.51 X	2.2	42.4	-5.41 X	2.0	4	LA
MNAWFM	51.6	-0.34	1.9	51.1	-0.39	2.3	4	HG
NENTAA	52.6	0.14	2.1	53.0	0.67	2.1	4	LP
NMHZTE	52.0	-0.13	1.8	51.6	-0.13	2.2	4	LP
PEUYLZ	55.3	1.50	1.5	55.3	2.03 *	2.3	3	XX
T2E4YZ	50.3	-0.98	2.8	49.6	-1.28	3.2	4	TD
T7W4G2	54.6	1.12	2.1	54.5	1.54	2.4	4	GA
TCKQB8	50.0	-1.13	2.4	52.1	0.20	2.1	4	LP
TLQVYG	54.9	1.27	2.3	53.7	1.09	3.1	4	TP
UGP7XZ	43.4	-4.39 X	2.5	44.1	-4.46 X	2.1	4	LA
VEZY9W	50.6	-0.82	0.9	50.1	-0.97	1.5	4	LP
VJBA4C	51.1	-0.58	1.2	50.7	-0.66	2.0	4	LA
X3WL63	51.1	-0.58	2.5	50.6	-0.72	1.8	4	LA
X62EY2	53.3	0.50	2.1	53.7	1.10	1.7	4	LA
Y9G7N9	50.9	-0.68	2.6	50.8	-0.57	2.2	4	LW

Consensus (All Labs) Results

Month Mean	52.30	Grand Mean	51.80
Avg SDr	2.14	Avg SDr	2.35
SD btwn Labs	2.03	SD btwn Labs	1.73
Labs Incl	22	Labs Incl	22



Containerboard Interlaboratory Testing Program
Analysis 237

Report #564 (K)
September 2016

Air Resistance, 36 lb Linerboard - 36Z

TAPPI Official Test Method T460

Key to Instrument Codes Reported by Participants

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	LW	L&W Gurley Densometer, Oil Flotation
TD	TMI Gurley Densometer	TL	Teledyne Gurley Densometer #4110, Oil Flotation
TP	Technidyne Profile/ plus Roughness & Porosity	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
Analysis 240

Report #564 (K)
September 2016

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

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
27QJ76	57.3	59.1	59.5	57.9	58.4	-0.27	2.7	1.0	58.1	-0.42	2.5	1.4	16	LZ
2KL69Q	57.5	55.5	57.0	58.2	57.1	-0.87	2.6	1.1	56.6	-1.18	2.8	1.5	16	LZ
44CTVR	62.3	58.1	61.0	59.5	60.2	0.51	3.4	1.8	60.2	0.58	3.6	2.3	16	LC
4NH9E4	60.0	59.8	59.8 L	59.7	59.8	0.34	1.6	0.1 L	59.1	0.09	1.7	0.6	16	LC
6GRFEN	59.5	59.2	58.7	58.5	59.0	-0.03	1.8	0.5	59.2	0.09	2.6	0.5	16	LC
72Y3JT	55.4	54.6	55.0	52.4 *	54.3	-2.05 *	2.9	1.3	55.1	-1.87	3.3	2.0	16	LC
7CVC3V	59.3	60.0	59.0 L	59.4	59.4	0.16	2.1	0.4	58.9	-0.05	1.6	0.8	16	LZ
7ZM928	60.5 L	60.7	59.8	58.2	59.8	0.32	2.1	1.1	59.0	0.02	2.0	1.0	16	LC
8RM94Q	59.4	59.2	59.3	59.3	59.3	0.11	2.7	0.1 L	59.3	0.18	3.0	0.1 L	12	LD
8VKR2H	58.7	58.2	59.0	59.3	58.8	-0.11	2.3	0.5	56.8	-1.04	2.4	1.7	12	LC
8XAWYW	59.3	60.4	60.3	58.8	59.7	0.28	1.8	0.8	60.1	0.54	2.2	1.2	16	LD
9HFTVX	57.2 L	58.8	56.8	56.9	57.4	-0.70	2.5	0.9	56.6	-1.18	2.4	5.4 H	15	LD
ATU6KE	63.2	62.8	63.4	61.8	62.8	1.63	2.4	0.7	61.1	1.04	2.6	2.0	13	EM
BE4VBE	56.9	58.0	55.8	57.1	56.9	-0.93	2.2	0.9	56.5	-1.22	2.5	1.1	16	LD
BQZYGU	57.1 H	57.6 H	58.8 H	60.1 H	58.4	-0.29	5.2	1.3	59.6	0.31	4.8	1.7	16	TG
C6WBRJ	49.5 X	50.6 X	50.9 X	50.6 X	50.4	-3.78 X	2.4	0.6	52.0	-3.42 X	2.4	1.7	12	TC
C77KGV	59.7	59.1	59.9	58.6	59.3	0.11	2.9	0.6	58.7	-0.14	2.6	0.9	16	MB
DK7J6R	59.6	57.5	58.8	58.2	58.5	-0.23	2.4	0.9	57.6	-0.69	2.3	1.4	16	TH
EMTKNK	53.0 *	54.1 *	53.4 *	54.8	53.8	-2.28 *	2.3	0.8	55.5	-1.67	2.6	1.9	16	LD
F3HAWM	62.5	61.9	63.1	62.6	62.5	1.52	1.6	0.5	61.9	1.42	2.3	1.0	16	LD
GFWY79	63.4	62.5	61.2	63.2	62.6	1.53	2.0	1.0	62.1	1.52	2.0	1.8	14	LE
JFUNRG	57.9	56.8	57.1 H	56.6 H	57.1	-0.86	4.2	0.6	59.1	0.08	3.5	1.5	16	LD
KM7367	59.4	58.6	59.0	58.7	58.9	-0.06	2.2	0.3	59.0	0.01	2.1	0.6	16	LD
LKY4A4	61.7	58.3	56.0	56.1 H	58.0	-0.44	4.2	2.7 H	60.9	0.97	3.5	7.6 H	12	LC
MQM9JK	61.1	60.9	61.3	61.1	61.1	0.89	1.7	0.1 L	61.1	1.05	1.7	0.1 L	4	TH
MYRHM3	58.8	58.2	57.0	56.9	57.7	-0.58	2.2	0.9	56.7	-1.13	2.2	1.7	16	LD
NEKB84	61.6	62.4	61.5	60.9	61.6	1.11	2.4	0.6	59.2	0.13	2.3	2.0	16	LD
NENTAA	57.9	57.1	56.7	56.2	57.0	-0.91	2.2	0.7	57.6	-0.66	2.5	1.7	15	LZ
NRQJR8	57.5	57.6	59.7	55.5	57.6	-0.65	2.0	1.7	58.0	-0.46	1.8	1.5	16	LC
P2UZX4	59.9	59.6	58.8	58.6	59.2	0.07	2.4	0.6	59.3	0.17	2.6	0.7	16	LD
PEUYLZ	63.2	63.4	63.0	63.0	63.2	1.79	2.4	0.2 L	62.3	1.63	2.7	4.3 H	12	MB
PRMFE9	68.6 XH	63.2 H	70.4 XH	68.3 XH	67.6	3.74 X	5.5	3.1 H	66.1	3.48 X	4.8	3.1	8	LC
Q8TYQ6	78.2 X	78.5 X	77.8 X	78.3 X	78.2	8.36 X	3.4	0.3	67.3	4.07 X	3.0	8.1 H	12	MB
Q8WNTG	61.2	59.7	61.1	59.7	60.4	0.60	1.6	0.8	61.0	0.99	1.9	1.0	16	MB
QTUXBH	56.6	59.6	57.8	60.8	58.7	-0.15	3.0	1.8	59.4	0.21	2.8	1.5	14	LX



Containerboard Interlaboratory Testing Program
Analysis 240

Report #564 (K)
September 2016

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM81
TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
QXRENC	59.1 L	59.3	58.8 L	59.3 L	59.1	0.03	1.1	0.2	59.2	0.13	1.8	0.3 L	16	LD
RLTXD2	57.4	58.6	60.2	59.8	59.0	-0.02	2.2	1.3	60.0	0.49	2.5	1.2	16	LC
T63HMB	57.8	57.0	56.2	56.9	56.9	-0.92	2.2	0.6	59.4	0.19	3.5	5.5 H	16	XX
TCKQB8	64.2	62.1	61.7	62.4	62.6	1.55	1.7	1.1	61.4	1.21	2.1	1.3	15	LC
TLQVYG	61.1	63.2	62.1	63.1	62.3	1.44	3.2	1.0	60.7	0.87	2.9	1.4	16	LC
U9U4U4	58.1	59.2	58.8	58.3	58.6	-0.21	2.0	0.5	58.6	-0.17	2.3	1.4	16	EM
UGP7XZ	60.9	59.4	59.9	60.5	60.2	0.49	2.8	0.7	59.9	0.48	3.6	2.6	16	XX
UW4C8E	60.7	59.9	60.2	60.7	60.4	0.58	1.5	0.4	60.5	0.73	1.6	0.6	16	LC
VJBA4C	59.2	59.9	60.1	59.3	59.6	0.25	2.2	0.4	59.5	0.25	2.3	0.7	16	LD
X62EY2	54.9	54.6	53.9 *	53.8 *	54.3	-2.08 *	2.1	0.5	55.4	-1.75	2.3	1.7	16	LD
XDGXEU	55.8	59.4	57.2	59.0	57.8	-0.53	2.9	1.7	57.6	-0.66	2.6	1.4	16	LD
Y7E6NB	64.3 L	63.4	61.5 L	65.3 *	63.6	1.98	1.2	1.6	63.3	2.11 *	1.2	1.6	16	TD
Y9G7N9	53.2 *H	55.5	55.7	58.2	55.7	-1.48	4.1	2.0	53.5	-2.70 *	4.7	4.6 H	15	XX
ZEL6WD	57.5	58.0 H	57.8	57.0	57.6	-0.64	2.9	0.4	57.9	-0.50	2.7	1.8	16	MB

Consensus (All Labs) Results									
Wk Mean	59.19	59.19	58.97	58.95	Month Mean	59.05	Grand Mean	58.96	
Avg SDr	2.65	2.40	2.65	2.59	Avg SDr	2.56	Avg SDr	2.65	
SD btwn Labs	2.64	2.34	2.36	2.54	SD btwn Labs	2.29	SD btwn Labs	2.04	
Labs Includ	46	47	46	46	SD btwn Wks	1.03	SD btwn Wks	2.28	
Labs Excl'd	3	2	3	3	Labs Includ	46	Labs Includ	46	
Labs not Rcvd	0	0	0	0					

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LE	L&W CRUSH TESTER 275
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TD	TMI Digital Crush Tester, Model 17-09	TG	TMI Compression Tester, Model 17-10
TH	TMI Compression Tester, Model 17-76	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
Analysis 250

Report #564 (K)
September 2016

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

TAPPI Official Method T824

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
2KL69Q	68.0	59.3 *H	63.4 H	70.6	65.3	-1.73	3.2	5.0 H	67.0	-0.85	3.3	3.6 H	16	LZ
6GRFEN	68.1	67.9	68.8	68.4	68.3	-0.24	1.9	0.4	67.4	-0.68	3.0	1.2	16	XX
8XAWYW	70.3	68.9	69.1	69.3	69.4	0.30	2.0	0.6	70.1	0.46	2.0	0.8	16	XX
D38NAF	68.1	68.2	67.5 L	68.5	68.1	-0.35	1.2	0.4	68.5	-0.21	2.2	0.8	16	XX
F3HAWM	69.5	71.6	70.3	69.8	70.3	0.75	2.1	0.9	70.0	0.41	2.4	0.9	16	LD
GFWY79	68.4	65.8	67.7	65.8	66.9	-0.95	2.2	1.3	66.5	-1.05	2.1	2.3	14	LE
JFUNRG	73.5 *	72.4	74.4 *	73.4 *	73.4	2.31 *	1.9	0.8	74.3	2.27 *	2.0	1.1	16	LD
KM7367	64.8 *	65.1 L	67.4	69.5	66.7	-1.04	1.6	2.2	64.8	-1.76	1.7	1.7	16	LD
P2UZX4	68.3	68.7	68.0	67.7	68.2	-0.30	2.2	0.4	67.2	-0.76	2.8	1.2	16	XX
Q8TYQ6	58.2 X	58.6 *	60.8 *	59.0 X	59.1	-4.82 X	1.6	1.2	58.0	-4.68 X	2.1	1.6	12	MB
QTUXBH	70.2	71.1	70.5	70.0	70.5	0.83	1.6	0.5	69.6	0.26	1.9	0.8	14	LD
QXRENC	68.8	69.4	68.4	68.9	68.9	0.06	1.4	0.4	69.2	0.11	1.8	0.6	16	LD
TCKQB8	71.7	69.7	67.5	66.9	69.0	0.08	2.1	2.2	70.4	0.59	2.1	1.7	16	XX
TLQVYG	70.7	69.4	71.9	72.2	71.1	1.14	1.9	1.3	71.0	0.84	1.8	1.0	16	LC
VJBA4C	66.5 H	66.8	66.1	66.1	66.4	-1.20	2.1	0.3	66.4	-1.11	2.0	0.6	16	LD
X62EY2	69.3	68.1	68.9	67.3	68.4	-0.20	1.9	0.9	70.8	0.77	2.2	1.9	16	LD
Y7E6NB	70.4 L	70.4 L	69.2 L	69.5 L	69.9	0.53	0.7	0.6	70.6	0.70	1.0	1.5	16	TD

Consensus (All Labs) Results									
Wk Mean	69.17	67.72	68.23	68.98	Month Mean	68.78	Grand Mean	68.98	
Avg SDr	1.84	2.09	1.92	1.86	Avg SDr	1.94	Avg SDr	2.21	
SD btwn Labs	2.05	3.82	3.04	2.03	SD btwn Labs	2.00	SD btwn Labs	2.35	
Labs Incd	16	17	17	16	SD btwn Wks	1.62	SD btwn Wks	1.56	
Labs Excl	1	0	0	1	Labs Incd	16	Labs Incd	16	
Labs not Rcvd	0	0	0	0					

Key to Instrument Codes Reported by Participants

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		



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

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
27QJ76	41.3	37.1	38.5	39.6	39.1	0.37	1.9	1.8	39.0	0.38	1.8	1.4	16	EM
4NH9E4	42.4	41.5	41.8	42.8	42.1	1.03	2.3	0.6	42.3	1.08	2.1	0.6	16	WK
7L3Q94	36.1 L	35.7 L	35.7	36.0 L	35.9	-0.34	0.9	0.2 L	35.7	-0.34	0.9	0.7	16	WK
8RM94Q	39.2	39.1	39.1	39.2 H	39.1	0.37	3.0	0.1 L	38.7	0.31	3.3	0.3	12	LD
8XAWYW	37.7	38.2	37.2	36.9	37.5	0.02	2.4	0.6	37.5	0.04	2.4	0.7	16	LD
9HFTVX	39.0	39.6	39.2	38.2	39.0	0.34	1.8	0.6	38.2	0.21	2.0	1.8	15	LD
C6WBRJ	27.5 *H	28.2 *	26.7 *	28.3 L	27.7	-2.12 *	2.9	0.7	26.9	-2.21 *	3.4	1.7	12	TC
F3HAWM	38.2	40.1	39.4	40.2 L	39.4	0.44	1.7	0.9	40.0	0.58	1.7	0.9	16	LD
MQM9JK	27.5 *	27.4 *	28.1 *	28.5	27.8	-2.08 *	1.5	0.5	27.8	-2.02 *	1.5	0.5	4	TH
MYRHM3	46.1	44.2	43.0	44.3	44.4	1.52	2.4	1.3	42.3	1.08	2.2	2.4 H	16	LZ
NRQJR8	36.1	36.3	36.6	29.7	34.7	-0.60	1.5	3.3 H	35.1	-0.48	1.4	1.8	16	LC
PP3AFK	40.2	40.7	39.5	40.0	40.1	0.58	2.1	0.5	40.3	0.65	2.4	1.0	16	TH
PRMFE9	38.6	39.5	41.0	39.2	39.6	0.47	2.3	1.0	39.6	0.49	2.2	0.8	8	LD
Q8TYQ6	32.0	31.8	31.9	31.8	31.9	-1.20	1.7	0.1 L	30.4	-1.47	2.2	1.6	12	MB
RLTXD2	26.5 *	28.6	27.5 *	26.5 *	27.3	-2.21 *	1.6	1.0	27.2	-2.16 *	1.5	1.7	16	XX
RM6ZXF	39.5	38.0	38.9 H	38.5	38.7	0.28	3.2	0.6	38.2	0.20	2.8	1.2	16	LZ
TCKQB8	38.1	38.3	37.7	39.2	38.3	0.20	2.4	0.6	38.1	0.17	3.5	1.4	16	LC
TLQVYG	38.4	38.4	40.9	38.7	39.1	0.37	2.1	1.2	39.3	0.44	1.9	1.2	16	LC
U9U4U4	40.1	40.3	40.1	41.2	40.4	0.65	2.1	0.5	40.6	0.72	1.7	0.7	16	LC
UW4C8E	39.7	41.0	39.9	39.4	40.0	0.56	1.4	0.7	40.6	0.71	1.7	1.0	16	LC
VJBA4C	40.0	39.9	40.8	40.5	40.3	0.63	1.7	0.4	40.6	0.71	1.9	0.9	16	LD
X62EY2	37.4	37.4	38.5	36.5	37.4	0.01	2.3	0.8	38.8	0.32	2.1	1.4	16	LD
Y9G7N9	41.7	34.3 H	41.5	45.1	40.6	0.70	2.7	4.5 H	40.1	0.60	2.6	3.3 H	15	XX

Consensus (All Labs) Results												
Wk Mean	37.53	37.21	37.53	37.41	Month Mean	37.42		Grand Mean	37.28			
Avg SDr	2.23	2.32	2.02	2.02	Avg SDr	2.15		Avg SDr	2.23			
SD btwn Labs	4.87	4.43	4.62	5.10	SD btwn Labs	4.60		SD btwn Labs	4.67			
Labs Incl	23	23	23	23	SD btwn Wks	1.40		SD btwn Wks	1.42			
Labs Excl	0	0	0	0	Labs Incl	23		Labs Incl	23			
Labs not Rcvd	0	0	0	0								



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

Report #564 (K)
September 2016

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TH	TMI Compression Tester, Model 17-76	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
 Analysis 261
STFI, 26 lb Corrugating Medium - CM81
 TAPPI Provisional Test Method T826

Report #564 (K)
September 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
27QJ76	12.3	12.0 *	12.3	12.0	12.2	-1.40	0.5	0.2	12.5	-0.86	0.7	0.5	16	LZ
4NH9E4	13.8	13.9	14.0	14.2	14.0	1.48	0.5	0.2	14.1	3.46 X	0.5	0.2	16	LZ
6GRFEN	12.9	12.8	12.8	12.8	12.8	-0.36	0.7	0.1 L	12.9	0.28	0.7	0.1	16	LB
72Y3JT	13.7	13.9	13.7	14.2	13.9	1.26	0.8	0.2	13.0	0.51	0.9	0.8 H	16	LW
7CVC3V	13.0	13.0	12.9	13.1	13.0	-0.07	0.9	0.1	12.7	-0.26	0.8	0.3	16	LU
9HFTVX	13.5	13.0	12.6 L	12.7	12.9	-0.15	0.5	0.4	12.6	-0.54	0.6	0.4	15	LZ
C6WBRJ	12.2 L	12.9 L	12.7 L	12.7 L	12.6	-0.66	0.0	0.3	12.3	-1.33	0.0	0.3	12	TS
DK7J6R	13.5	12.9	13.0	13.4	13.2	0.23	0.5	0.3	13.0	0.51	0.6	0.3	16	TT
KJRMFE	13.7	12.9	12.7	13.9	13.3	0.38	0.7	0.6 H	12.7	-0.27	0.8	0.7	16	LA
NENTAA	11.4 *	11.5 X	12.2	12.2	11.8	-1.93	0.7	0.4	12.2	-1.82	0.8	0.4	16	LB
P2UZX4	12.9	12.8	12.8	12.9	12.8	-0.32	0.7	0.1	13.0	0.37	0.7	0.1	16	LB
PEUYLZ	14.7 *L	14.8 XL	14.5 *L	14.3 L	14.5	2.34 *	0.1	0.2	13.5	1.82	0.1	0.8 H	12	BK
QTUXBH	13.4	13.8	14.3	14.1	13.9	1.30	0.7	0.4	13.2	1.16	0.7	0.5	14	LB
QXRENC	12.8	13.0	12.8	12.9	12.9	-0.23	0.6	0.1	13.0	0.47	0.6	0.1	16	LA
RM6ZXF	12.7	13.4	13.2	13.5	13.2	0.25	0.9	0.3	13.3	1.28	0.9	0.4	16	LA
TLQVYG	12.7	12.8	12.5	12.9	12.7	-0.51	0.8	0.2	12.8	-0.02	0.7	0.2	16	LU
U9U4U4	14.0	13.1	13.7	13.3	13.5	0.76	0.9	0.4	12.7	-0.31	0.8	0.8 H	16	LB
UW4C8E	13.3	13.3	13.4	12.5	13.1	0.13	0.6	0.4	13.0	0.46	0.6	0.5	16	XX
VJBA4C	13.4	13.1	13.0	13.2	13.2	0.20	0.9	0.2	13.2	0.92	0.9	0.3	16	LA
X62EY2	11.9	12.7	12.3	12.2	12.3	-1.19	0.8	0.3	12.6	-0.64	0.8	0.3	16	LA
XDGXEU	12.3	12.4	12.1	12.4	12.3	-1.13	0.8	0.1	12.4	-1.15	0.8	0.2	16	LU
Y9G7N9	13.0 L	13.4 L	13.5 L	13.2 L	13.3	0.41	0.0	0.2	13.3	1.20	0.0	0.5	16	XX
ZEL6WD	12.1 L	12.6 L	12.8 L	12.7 L	12.5	-0.77	0.0	0.3	12.2	-1.80	0.0	0.4	16	LA

Consensus (All Labs) Results														
Wk Mean	13.00	13.03	13.04	13.10	Month Mean	13.04			Grand Mean	12.82				
Avg SDr	0.71	0.68	0.68	0.66	Avg SDr	0.68			Avg SDr	0.67				
SD btwn Labs	0.76	0.47	0.65	0.68	SD btwn Labs	0.64			SD btwn Labs	0.36				
Labs Incl	23	21	23	23	SD btwn Wks	0.30			SD btwn Wks	0.46				
Labs Excl	0	2	0	0	Labs Incl	23			Labs Incl	22				
Labs not Rcvd	0	0	0	0										



Containerboard Interlaboratory Testing Program
Analysis 261
STFI, 26 lb Corrugating Medium - CM81
TAPPI Provisional Test Method T826

Report #564 (K)
September 2016

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LB	L&W Model 152	LU	L&W 52 without moisture correction (was 53)
LW	L&W 53 with moisture correction (was 53M)	LZ	L&W (model not specified)
TS	TMI Monitor/STFI Compression Tester, 17-33	TT	TMI Short Span Compression, 17-34 (MB K455)
XX	Instrument make/model not specified by lab		