



Containerboard Interlaboratory Testing Program

Participant Summary Report #585 (F) - June 2018

[Introduction to the Containerboard Program](#)

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

Analysis	Sample	Analysis Name
<u>201</u>	<u>BX12</u>	<u>Box Compression Strength, Corrugated Boxes</u>
<u>202</u>	<u>EC11</u>	<u>Edgewise Compressive Strength, Wax (T811), Corrugated Board</u>
<u>203</u>	<u>EC11</u>	<u>Edgewise Compressive Strength by Clamp (T839), Corrugated Board</u>
<u>205</u>	<u>42D3</u>	<u>Mullen Burst of Linerboard, 42 lb Linerboard</u>
<u>207</u>	<u>35E1</u>	<u>Mullen Burst of Linerboard, 35 lb Linerboard</u>
<u>215</u>	<u>42D3</u>	<u>Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard</u>
<u>217</u>	<u>35E1</u>	<u>Ring Crush of Linerboard, Rigid Platen Type, 35 lb Linerboard</u>
<u>223</u>	<u>42D3</u>	<u>STFI of Linerboard, 42 lb Linerboard</u>
<u>225</u>	<u>35E1</u>	<u>STFI of Linerboard, 35 lb Linerboard</u>
<u>228</u>	<u>56A</u>	<u>Roughness - Stylus Method, 56 lb Linerboard</u>
<u>229</u>	<u>42D3</u>	<u>Roughness - Sheffield Method, 42 lb Linerboard</u>
<u>231</u>	<u>36Z</u>	<u>Internal Bond Strength, Linerboard, 36 lb Linerboard</u>
<u>234</u>	<u>56A</u>	<u>Coefficient of Static Friction - Inclined Plane, 56 lb Linerboard</u>
<u>237</u>	<u>36Z</u>	<u>Air Resistance - Gurley Method, Linerboard, 36 lb Linerboard</u>
<u>240</u>	<u>CM92</u>	<u>Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium</u>
<u>250</u>	<u>CM92</u>	<u>Fluted Crush of Medium, 26 lb Corrugating Medium</u>
<u>255</u>	<u>CM92</u>	<u>Ring Crush of Medium, 26 lb Corrugating Medium</u>
<u>261</u>	<u>CM92</u>	<u>STFI of Medium, 26 lb Corrugating Medium</u>

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	CM92	January 2018-Current
	CM91	October 2016-December 2017
35 lb Linerboard	35E1	June 2017-Current
42 lb Linerboard	42D3	November 2017-Current
	42D2	August 2016-October 2017
56 lb Linerboard	56A2	January 2018-Current
	56A1	July 2016-November 2017

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

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 (SD'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 SD	- For the cumulative period, the average of the within-laboratory standard deviations (SD'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, excluding those laboratories flagged with an 'X'.

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 SD for each week is not shown, but laboratory average SD and consensus average SD values are shown. |
| L | Indicates low within-laboratory standard deviation. The laboratory SD for each week is not shown, but laboratory monthly average SD and consensus average SD 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 #585 (F)
June 2018

Top to Bottom Box Compression Strength, Corrugated Boxes - BX12

TAPPI Official Test Method T804

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
42Z8ZG	547.7	-0.77	22.00	559.5	-0.48	8.26	4	LM
7TEKJ	556.0	-0.35	20.19	568.8	-0.15	46.89	3	LG
7WG29Z	486.6	-3.84 X	31.03	559.8	-0.47	49.89 H	4	LS
833DMT	549.9	-0.66	37.37	623.7	1.77	64.33 H	3	LH
8XMLVZ	549.3	-0.69	9.41	564.6	-0.30	13.70	4	TE
AH7N7G	582.6	0.99	18.47	583.3	0.35	13.89	4	LS
C6QFGU	604.6	2.09 *	35.02	595.8	0.79	12.40	2	LS
CJWADD	562.4	-0.03	27.94	578.0	0.17	18.51	4	ET
DPUCW4	579.0	0.81	9.30	594.7	0.75	12.05	4	ES
DR2WK4	548.6	-0.72	16.35	567.4	-0.20	13.13	4	ER
E4UHHM	581.0	0.91	27.69	580.0	0.24	4.48	4	LG
E8RY29	593.2	1.52	19.78	572.2	-0.03	14.61	4	LG
JXPCR	544.7	-0.92	30.55	542.4	-1.08	5.71	4	LS
JY6R6Y	558.3	-0.23	40.14	556.5	-0.58	10.66	4	ER
KGW3L7	643.2	4.03 X	21.87	621.4	1.69	28.85	4	XX
L7D8JC	532.8	-1.52	71.35 H	517.6	-1.95 *	20.54	4	TB
PFPBGL	585.6	1.14	9.15	565.9	-0.25	44.46	4	EX
RDRU4F	542.4	-1.04	25.35	542.2	-1.08	6.24	4	LL
RUZVTB	574.2	0.57	23.56	589.8	0.58	10.95	4	ET
UK6PWF	548.6	-0.72	7.77	553.5	-0.69	12.02	4	LG
VPBMYR	547.6	-0.77	12.58	542.6	-1.07	12.84	4	EX
WB7NMF	586.3	1.17	21.55	585.2	0.42	1.92 L	4	ER
WX66VF	660.4	4.90 X	26.45	643.7	2.47 *	15.77	4	ER
XJH6UF	569.6	0.33	11.60	578.7	0.19	12.07	4	LM
XJYF7	541.0	-1.11	16.46	542.1	-1.09	27.56	4	LL

Consensus (All Labs) Results			
Month Mean	562.98	Grand Mean	573.16
Avg SD	27.17	Avg SD Months	24.76
SD btwn Labs	19.88	SD btwn Labs	28.55
Labs Incl	22	Labs Incl	25

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	550.82	15.45	12.16	7
Clip sealing	568.65	19.55	5.67	15



Containerboard Interlaboratory Testing Program
Analysis 201

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Top to Bottom Box Compression Strength, Corrugated Boxes - BX12

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

Report #585 (F)
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Edgewise Compressive Strength, by T811, Corrugated Board - EC11

TAPPI Official Test Method T811

WebCode	Monthly Results				Cumulative Results				
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
AH7N7G	39.5	-0.18	3.48		39.5	-0.18	0.00	1	LD
C6QFGU	34.1	-1.69	1.22	L	34.1	-1.69	0.00	1	EM
E8RY29	42.9	0.80	1.83		42.9	0.80	0.00	1	LE
JXPCRX	44.9	1.35	1.49		44.9	1.35	0.00	1	LC
JY6R6Y	39.0	-0.31	4.07		39.0	-0.31	0.00	1	EN
QQK7RM	37.7	-0.69	3.86		37.7	-0.69	0.00	1	WK
TFYJZX	42.5	0.68	0.85	L	42.5	0.68	0.00	1	TD
UK6PWF	44.0	1.12	1.47		44.0	1.12	0.00	1	TH
VPBMYR	40.4	0.08	1.77		40.4	0.08	0.00	1	LC
WQ2943	36.0	-1.16	5.06	H	36.0	-1.16	0.00	1	LC

Consensus (All Labs) Results			
Month Mean	40.10	Grand Mean	40.10
Avg SD	2.87	Avg SD Months	0.00
SD btwn Labs	3.52	SD btwn Labs	3.52
Labs Incd	10	Labs Incd	10

Key to Instrument Codes Reported by Participants

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	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Monitor/Compression Tester, Model 17-76	WK	Zwick Z005 Crush Tester



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC11
 TAPPI Official Test Method T839

Report #585 (F)
June 2018

WebCode	Monthly Results			Cumulative Results							
	Mean	CPV	SD	Mean	CPV	SD	Months	Inst			
2JQHPE	45.2	0.82	2.21	45.2	0.82	0.00	1	CT			
2WPJ3F	43.5	0.05	2.34	43.5	0.05	0.00	1	LD			
42Z8ZG	45.2	0.80	1.23	45.2	0.80	0.00	1	EM			
63MFEB	41.7	-0.79	1.48	41.7	-0.79	0.00	1	EM			
7TEXKJ	42.8	-0.31	1.39	42.8	-0.31	0.00	1	TJ			
7WG29Z	42.2	-0.56	2.53	42.2	-0.56	0.00	1	TB			
7YMGMH	41.5	-0.91	1.40	41.5	-0.91	0.00	1	LD			
833DMT	42.3	-0.52	4.48	H	42.3	-0.52	0.00	1	EM		
8JLAZZ	45.6	1.01	1.42	45.6	1.01	0.00	1	LC			
8XMLVZ	45.5	0.97	0.99	45.5	0.97	0.00	1	LD			
AH7N7G	46.9	1.58	2.46	46.9	1.58	0.00	1	LD			
BR94RF	41.6	-0.84	2.46	41.6	-0.84	0.00	1	LD			
C2DB8F	44.9	0.69	1.50	44.9	0.69	0.00	1	EM			
C6QFGU	43.1	-0.13	1.17	43.1	-0.13	0.00	1	EM			
CJWADD	41.8	-0.73	1.77	41.8	-0.73	0.00	1	EM			
DPUCW4	43.7	0.14	0.78	L	43.7	0.14	0.00	1	LD		
DR2WK4	42.2	-0.54	1.60	42.2	-0.54	0.00	1	LD			
E4UHHM	44.2	0.36	1.71	44.2	0.36	0.00	1	EM			
E8RY29	43.6	0.08	3.02	43.6	0.08	0.00	1	LY			
FARWFT	44.0	0.27	1.56	44.0	0.27	0.00	1	TD			
JXPCRX	42.8	-0.31	2.84	42.8	-0.31	0.00	1	LC			
JY6R6Y	39.8	-1.67	2.51	39.8	-1.67	0.00	1	EN			
L62ACM	47.3	1.80	2.29	47.3	1.80	0.00	1	LC			
L7D8JC	34.5	-4.12	X	0.61	L	34.5	-4.12	X	0.00	1	LD
L7DZJ7	43.7	0.14	1.48	43.7	0.14	0.00	1	LD			
MT3WRF	46.1	1.24	1.25	46.1	1.24	0.00	1	LD			
NN6RD3	39.4	-1.84	1.79	39.4	-1.84	0.00	1	TD			
PFPBGL	43.1	-0.13	1.85	43.1	-0.13	0.00	1	LD			
QQ4RNJ	47.2	1.72	1.95	47.2	1.72	0.00	1	TK			
QQK7RM	40.1	-1.55	0.77	L	40.1	-1.55	0.00	1	WK		
R2H76Q	41.9	-0.72	2.42	41.9	-0.72	0.00	1	TD			
RDRU4F	43.6	0.09	1.11	43.6	0.09	0.00	1	LC			
RUZVTB	41.5	-0.87	1.60	41.5	-0.87	0.00	1	TD			
TFYJZX	44.1	0.31	0.99	44.1	0.31	0.00	1	TD			
TNP42P	47.2	1.74	1.68	47.2	1.74	0.00	1	TG			
UK6PWF	45.6	0.99	1.62	45.6	0.99	0.00	1	TH			
UYKQRK	40.5	-1.37	1.91	40.5	-1.37	0.00	1	LC			
VPBMYR	43.0	-0.18	1.60	43.0	-0.18	0.00	1	LC			
WQ2943	44.9	0.67	1.32	44.9	0.67	0.00	1	LC			



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC11
 TAPPI Official Test Method T839

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WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
WX66VF	40.4	-1.37	2.75	40.4	-1.37	0.00	1	EM
XJH6UF	46.4	1.37	0.98	46.4	1.37	0.00	1	TG
YGNV2P	39.8	-1.69	0.33 L	39.8	-1.69	0.00	1	XX
ZJAVYK	43.9	0.20	2.70	43.9	0.20	0.00	1	LD

Consensus (All Labs) Results				
Month Mean		43.42	Grand Mean	43.42
Avg SD		1.94	Avg SD Months	0.00
SD btwn Labs		2.17	SD btwn Labs	2.17
Labs Incd		42	Labs Incd	42

Key to Instrument Codes Reported by Participants

CT	Con-Ten	EM	Emerson 1200 Series
EN	Emerson 2200	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W 830
TB	TMI Monitor/Compression Tester, Model 17-70	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Digital Crush Tester, 17-76	TH	TMI Monitor/Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TK	TLS Compression Tester, Model 5184
WK	Zwick Z005 Crush Tester	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42D3
 TAPPI Official Test Method T807

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
26RLD8	112.6	113.3	109.8	112.6	112.1	0.60	10.9	1.6	107.4	-0.49	10.5	4.0	15	AH
2JQHPE	113.2	117.2	112.7	118.4 *	115.4	1.34	13.1	2.9	114.1	1.12	12.8	2.5	16	XX
2WPJ3F	119.5	115.7	116.8 *	116.5	117.1	1.73	14.5	1.7	118.1	2.07 *	13.7	3.1	16	LC
3CK4J3	108.8 L	108.4	108.0 L	106.4 L	107.9	-0.34	4.7	1.1	108.1	-0.33	5.4	1.6	16	RE
3X8QAH	109.1	118.5	111.7	112.2	112.9	0.78	13.2	3.9	114.6	1.24	12.3	3.3	8	AX
4WP2F4	107.2 L	108.5	111.1	105.7	108.1	-0.29	6.3	2.3	108.6	-0.19	5.7	1.4	16	TP
6NAZFL	120.0	117.9	116.8 *	111.1	116.5	1.58	11.9	3.8	116.5	1.68	11.9	3.8	4	AH
6P7D3D	106.2	108.2	104.2	105.5	106.0	-0.76	10.1	1.7	107.5	-0.46	10.5	2.9	16	LC
6XUBK7	111.1	114.6	114.5	115.9	114.0	1.04	8.3	2.0	111.0	0.39	7.8	3.0	16	LC
6ZMZCE	111.6	114.6	111.2	113.8	112.8	0.76	13.0	1.7	116.6	1.72	13.3	4.0	15	LA
78HJRF	107.8	104.5	107.1	105.5	106.2	-0.71	11.8	1.5	105.5	-0.95	9.9	2.1	16	LB
7N98FR	125.0 *	No DATA	108.6	113.2	115.6	1.39	10.6	8.5 H	111.0	0.38	11.2	6.1	13	LC
7YMGMH	110.2	105.6	109.4	110.8	109.0	-0.09	9.8	2.4	107.1	-0.57	11.6	3.9	16	LC
8J8K2U	109.8	111.6	107.5	110.6	109.9	0.10	12.9	1.8	110.5	0.25	11.3	3.4	12	LC
8KJDZ3	104.5	105.5	104.5	110.6	106.3	-0.70	11.5	2.9	106.2	-0.77	10.9	2.7	16	LA
93DE77	107.4	112.8 L	109.3	No DATA	109.8	0.10	4.3	2.7	109.4	-0.02	4.0	2.0	13	XX
97YCGH	103.5	104.3	108.7	104.7	105.3	-0.92	10.7	2.3	103.8	-1.34	10.1	3.3	16	LC
9NDQXC	112.9	113.6	125.8 X	131.7 X	121.0	2.59 *	9.1	9.3 H	119.0	2.29 *	9.8	6.6	16	TB
AH7N7G	111.9	115.9	105.7	102.5	109.0	-0.09	10.0	6.0	109.1	-0.07	11.1	3.8	16	LA
DAZWNX	112.0	109.3	108.5	117.4 *	111.8	0.54	12.0	4.0	111.1	0.41	12.6	3.2	16	LJ
DPUCW4	111.4	106.7	109.1	107.3	108.6	-0.17	11.7	2.1	107.6	-0.45	11.1	2.6	16	LA
DR2WK4	99.8	98.3 *	98.4 *	96.6 *	98.3	-2.49 *	11.0	1.3	104.5	-1.18	10.9	4.1	16	AH
E7GCZ9	105.0	107.6	104.9	112.6	107.5	-0.42	10.4	3.6	105.0	-1.07	10.8	6.2	16	LC
E8RY29	109.0	112.3	113.6	111.8	111.7	0.51	10.7	1.9	112.8	0.80	12.1	2.6	16	LZ
ER22TL	115.0	201.3 XH	109.8 L	110.5	134.1	5.53 X	137.5	44.8 H	116.1	1.60	69.1	23.5 H	16	AH
ERGDEW	108.4	108.9	111.5	106.7	108.9	-0.12	11.5	2.0	109.0	-0.10	10.7	1.3 L	16	LA
FKCVGW	107.0	107.2	104.1	102.7	105.2	-0.93	10.2	2.2	103.2	-1.49	11.1	7.8	16	LA
J266HQ	109.2	109.3	109.0 L	109.0	109.1	-0.07	7.1	0.2 L	109.5	0.01	8.1	0.3 L	16	LJ
J9PX33	110.7	106.5	104.7	107.4	107.3	-0.47	11.2	2.5	106.6	-0.68	11.2	3.5	16	LC
JQ8W8Z	100.8	114.3	107.8	105.5	107.1	-0.52	9.9	5.6	107.9	-0.37	9.3	3.9	16	LC
JXPCRX	98.9	101.5	101.0	105.2	101.7	-1.74	12.9	2.6	103.7	-1.37	11.4	3.2	16	AH
LMWZ7V	104.2	104.7	111.8	116.7	109.4	-0.01	8.7	6.0	110.8	0.32	9.7	5.5	16	LC
MT3WRF	112.8	112.8	111.4	111.2	112.0	0.59	10.0	0.9	111.9	0.60	8.7	0.6 L	16	LA
NR6XYZ	99.9	97.5 *	103.1	104.7	101.3	-1.82	11.9	3.2	104.5	-1.17	13.3	3.4	13	LC
PDH9EN	109.3	107.7 L	109.4 L	109.4 L	108.9	-0.10	4.0	0.9	109.3	-0.03	5.5	0.6 L	12	LA



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42D3
 TAPPI Official Test Method T807

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
PFPBGL	115.4	111.0	107.2	108.0	110.4	0.22	12.4	3.7	107.8	-0.39	11.4	8.0	14	AH
PUTRBU	111.1	118.0	111.2	104.1	111.1	0.38	12.4	5.7	111.0	0.39	11.8	3.5	16	TB
PXMNXZ	103.7	109.0	105.5	108.3	106.6	-0.62	10.4	2.4	109.4	-0.02	11.1	2.8	15	TB
QMLPJY	106.1	104.4	104.1	104.6	104.8	-1.03	9.8	0.9	100.7	-2.09	*10.4	7.4	16	XX
QWD2ZL	117.4	114.8	112.9	107.7	113.2	0.85	11.5	4.1	111.4	0.48	12.3	3.4	16	LZ
RL7LRT	119.4 H	113.9	115.6	110.3	114.8	1.20	13.5	3.8	114.8	1.28	11.8	3.4	14	LZ
TN89JM	110.2	104.4	107.2	104.3	106.5	-0.64	13.6	2.8	106.5	-0.70	13.6	2.8	4	LC
UXE64K	124.9 *	109.0	103.0	107.6	111.1	0.39	12.9	9.5 H	111.8	0.57	12.0	5.6	12	LA
UY772V	128.3 X	110.1	107.7	124.1 X	117.6	1.82	13.8	10.2 H	117.2	1.87	13.8	6.2	16	LC
UYKQRK	117.6	107.8	110.9	109.8	111.5	0.47	11.2	4.2	112.6	0.76	11.6	3.2	12	LA
VDYDDM	108.7	107.5	102.2	108.9	106.8	-0.58	7.6	3.1	107.5	-0.46	10.2	3.2	16	LA
VX8MAE	107.7 L	106.8	108.6 L	106.4	107.4	-0.45	5.0	1.0	104.1	-1.28	7.2	3.0	16	LA
WB7NMF	99.4	101.5	100.2	99.1 *	100.0	-2.10 *	10.2	1.1	104.6	-1.17	12.0	3.6	16	LZ
Y788AC	104.8	108.0	107.2	103.6	105.9	-0.78	13.1	2.0	107.1	-0.55	12.2	2.4	16	LC
Z9NXP8	109.5	108.4	109.1	107.7	108.7	-0.16	6.6	0.8	108.7	-0.17	5.6	0.6 L	16	AH
ZJAVYK	107.3	106.2	101.5	107.8	105.7	-0.83	8.9	2.9	106.1	-0.80	9.2	2.7	16	LA
ZTF3EK	112.5	109.1	110.8	109.1	110.4	0.22	12.0	1.6	107.7	-0.42	14.1	2.3	16	LC
ZV3KBC	108.6	113.8	116.3	113.0	112.9	0.78	13.0	3.2	113.4	0.95	12.4	3.2	12	LA

Consensus (All Labs) Results										
Wk Mean	109.81	109.38	108.40	108.62	Month Mean	109.41			Grand Mean	109.44
Avg SDr	10.10	11.53	10.62	10.87	Avg SD	10.83			Avg SD	14.36
SD btwn Labs	5.86	4.87	4.26	4.51	SD btwn Labs	4.47			SD btwn Labs	4.17
Labs Incd	52	51	52	50	SD btwn Wks	3.84			SD btwn Wks	5.00
Labs Excl	1	1	1	2	Labs Incd	52			Labs Incd	53
Labs not Rcvd	0	1	0	1						

Key to Instrument Codes Reported by Participants

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 207
Bursting Strength (Mullen), 35 lb Linerboard - 35E1
 TAPPI Official Test Method T807

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
26RLD8	96.6	100.2	96.0	96.6	97.4	1.65	6.3	1.9	95.7	1.08	8.3	3.4	12	AH
2JQHPE	93.2	87.9	98.9	100.7 *	95.2	0.97	10.2	5.8 H	95.5	1.04	9.5	3.9	12	XX
2WPJ3F	97.3	96.1	94.4	93.1	95.2	0.99	10.2	1.9	95.8	1.15	9.4	2.6	12	LC
3CK4J3	94.8	95.2	94.0	95.4	94.9	0.87	6.4	0.6	94.5	0.70	6.3	1.1	12	RE
3X8QAH	94.9	89.9	90.2	97.1	93.0	0.30	8.8	3.6	92.9	0.22	8.2	2.8	8	AX
4WP2F4	88.4	89.3	89.8	88.4	89.0	-0.97	5.5	0.7	89.4	-0.91	4.9	1.2	9	TP
6NAZFL	95.3	98.3	95.9	93.0	95.6	1.11	8.9	2.2	95.6	1.08	8.9	2.2	4	AH
6P7D3D	91.0	91.5	88.9	93.9	91.3	-0.23	7.9	2.1	92.2	-0.01	7.6	2.3	12	LC
6ZMZCE	99.6 *	99.1	99.3	97.9	99.0	2.16 *	7.7	0.7	97.7	1.73	8.3	2.2	11	LA
78HJRF	88.4	91.7	90.4	90.5	90.2	-0.58	7.2	1.3	90.6	-0.53	6.5	1.7	12	LB
7N98FR	98.8	No DATA	90.0	96.3	95.0	0.92	9.1	4.6	95.3	0.97	9.7	2.5	11	LC
7YMGMH	90.4	94.0	90.7	91.3	91.6	-0.14	9.1	1.6	90.3	-0.60	8.7	3.0	12	LC
8J8K2U	91.0	93.2	87.2	92.3	90.9	-0.36	9.4	2.6	91.7	-0.18	9.8	2.1	8	LC
8KJDZ3	96.4	90.5	86.3	88.4	90.4	-0.52	6.9	4.3	89.9	-0.73	7.5	3.4	12	LA
93DE77	91.4	89.3	90.3	No DATA	90.3	-0.55	4.6	1.1	90.1	-0.67	4.7	1.8	11	XX
97YCGH	87.0	88.6	90.2	85.5	87.8	-1.33	8.1	2.0	89.0	-1.03	8.2	6.2	12	LC
9NDQXC	103.7 X	99.8	103.1 *	103.5 X	102.5	3.27 X	7.8	1.8	101.8	3.04 X	7.8	3.4	12	TB
AH7N7G	90.2	94.5	93.0	91.9	92.4	0.10	8.1	1.8	94.1	0.58	7.9	3.8	12	LA
DAZWNX	91.6	94.0	95.6	95.3	94.1	0.64	8.1	1.8	100.1	2.50 *	10.8	9.4 H	8	LJ
DPUCW4	91.7	89.8	89.9	90.9	90.6	-0.47	9.4	0.9	90.2	-0.66	8.5	2.0	12	LA
DR2WK4	88.8	82.4 *	86.2	87.4	86.2	-1.84	7.1	2.7	87.7	-1.46	7.2	2.3	12	AH
E7GCZ9	89.5	92.8	92.2	92.2	91.7	-0.13	7.2	1.5	88.7	-1.14	7.6	3.2	12	LA
E8RY29	90.1	96.2	96.1	94.0	94.1	0.64	9.1	2.8	96.3	1.29	8.9	2.7	12	LZ
ER22TL	93.2	98.4	95.3	92.0	94.7	0.82	7.0	2.8	93.8	0.50	6.7	2.3	8	AH
ERGDEW	91.8	90.2	91.7	93.6	91.8	-0.08	7.6	1.4	91.5	-0.25	7.7	1.5	12	LA
FKCVGW	91.7	85.4	87.7	88.2	88.2	-1.20	9.2	2.6	90.2	-0.66	8.6	2.5	12	LA
J266HQ	91.0	90.7	91.4	91.6	91.2	-0.28	5.4	0.4 L	92.0	-0.08	6.4	0.6 L	12	LJ
J9PX33	86.8	92.5	91.7	85.6	89.2	-0.91	7.4	3.4	89.1	-0.99	8.0	2.7	12	LA
JQ8W8Z	91.4	91.9	91.0	95.1	92.3	0.08	7.3	1.9	92.1	-0.05	8.7	1.9	12	LC
JXPCR X	89.9	86.0	91.0	88.3	88.8	-1.03	9.2	2.2	88.7	-1.15	8.5	2.0	12	AH
LMWZ7V	92.1	91.1	94.8	94.2	93.1	0.30	9.8	1.7	93.9	0.54	8.8	4.2	12	LC
MT3WRF	90.1	92.2	91.6	92.9	91.7	-0.13	6.9	1.2	92.6	0.10	6.3	1.0	12	LA
NR6XYZ	85.1	86.4	88.5	88.8	87.2	-1.53	11.7	1.8	89.3	-0.95	10.5	5.1	12	LC
PDH9EN	92.0	92.1 L	92.1 L	92.0	92.1	-0.01	3.5	0.0 L	92.3	0.00	3.5	0.2 L	12	LA
PFPBGL	95.0	98.2	93.0	96.6	95.7	1.13	8.8	2.2	91.3	-0.31	8.9	7.7 H	12	AH



Containerboard Interlaboratory Testing Program
 Analysis 207
Bursting Strength (Mullen), 35 lb Linerboard - 35E1
 TAPPI Official Test Method T807

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
PUTRBU	94.2	91.8	94.1	92.6	93.2	0.35	10.9	1.2	94.3	0.66	9.7	1.6	12	TB
PXMNXZ	92.9	99.6	90.3	91.3	93.5	0.45	8.8	4.2	94.6	0.75	8.7	3.7	11	TB
QMLPJY	90.5	90.7	92.8	87.6	90.4	-0.53	8.0	2.1	96.7	1.41	8.3	7.5	H 12	XX
QWD2ZL	92.7	90.1	90.4	95.3	92.1	0.01	10.3	2.4	91.9	-0.12	9.6	2.4	12	LZ
RL7LRT	95.4	97.0	98.7	100.0 *	97.7	1.77	7.9	2.0	97.8	1.75	8.6	2.6	10	LZ
TN89JM	88.1	90.0	88.7	88.2	88.8	-1.04	7.9	0.9	88.8	-1.11	7.9	0.9	L 4	LC
UXE64K	96.9	95.4	96.6	92.4	95.3	1.02	9.2	2.1	94.5	0.71	8.9	2.4	12	LA
UY772V	89.9	96.6	90.7	95.6	93.2	0.35	9.1	3.4	94.7	0.77	8.4	7.1	H 12	LC
UYKQRK	95.4	90.9	99.2	93.2 H	94.7	0.81	9.1	3.6	94.1	0.58	8.7	4.4	12	LA
VDYDDM	92.8	93.4	95.2	91.3	93.2	0.34	7.7	1.6	90.9	-0.42	7.2	3.2	12	LA
VX8MAE	92.3	91.3	91.7 L	92.2	91.9	-0.06	4.5	0.5	87.9	-1.38	5.1	4.0	12	LA
WB7NMF	85.7	85.0	87.9	82.4 *	85.3	-2.13 *	9.4	2.3	86.6	-1.79	8.8	2.7	12	LA
Y788AC	95.0	87.4	84.9	94.5	90.5	-0.51	8.7	5.1 H	91.0	-0.40	8.3	3.4	12	LC
Z9NXP8	88.8	88.5	91.4	89.6	89.6	-0.78	5.7	1.3	89.6	-0.86	4.8	1.1	12	AH
ZJAVYK	82.1 *	87.2	81.1 *	85.2	83.9	-2.55 *	8.5	2.8	85.3	-2.21 *	7.3	3.2	12	LA
ZTF3EK	93.0	97.1	90.7	92.9	93.4	0.42	8.9	2.7	91.1	-0.38	8.8	3.0	12	LC
ZV3KBC	100.5 *	97.0	99.2	93.1	97.4	1.68	8.5	3.2	95.1	0.92	9.7	3.7	12	LA

Consensus (All Labs) Results									
Wk Mean	92.01	92.32	92.16	92.17	Month Mean	92.08	Grand Mean	92.25	
Avg SDr	8.16	8.17	8.20	8.48	Avg SD	8.25	Avg SD	8.15	
SD btwn Labs	3.69	4.24	4.11	3.76	SD btwn Labs	3.19	SD btwn Labs	3.14	
Labs Incl	51	51	52	50	SD btwn Wks	2.50	SD btwn Wks	3.53	
Labs Excl	1	0	0	1	Labs Incl	51	Labs Incl	51	
Labs not Rcvd	0	1	0	1					

Key to Instrument Codes Reported by Participants

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 - 42D3
 TAPPI Official Test Method T822

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
26RLD8	76.9 *	79.3	77.0 *H	79.3 H	78.1	-2.15 *	7.2	1.4	89.8	0.37	5.6	8.2 H	13	LC
2WPJ3F	83.8	88.4	85.7 L	86.0	86.0	-0.41	2.7	1.9	86.5	-0.41	3.5	1.5	16	LD
3CK4J3	88.9	89.1	88.3	90.3	89.1	0.29	3.7	0.9	92.4	1.01	3.4	2.9	16	LZ
3X8QAH	80.3	81.1	81.4	79.0	80.4	-1.64	4.3	1.0	77.6	-2.50 *	4.0	3.4	8	LC
4WP2F4	89.9	88.2	90.3	90.8	89.8	0.43	4.0	1.1	90.0	0.42	3.6	1.2	16	TH
67MJ9H	90.5	88.9	90.8	91.0	90.3	0.55	3.6	1.0	90.6	0.58	3.7	1.7	16	LD
6FCCF9	75.4 X	80.0	77.2 *	77.4	77.5	-2.29 *	3.9	1.9	77.1	-2.62 *	4.8	1.8	8	LC
6P7D3D	86.3	87.8	88.5	86.4 L	87.3	-0.13	3.3	1.1	87.5	-0.17	3.6	1.9	16	LD
6ZMZCE	95.1	96.4	86.2	90.5	92.1	0.93	4.4	4.6	89.0	0.20	5.0	10.1 H	15	LZ
78HJRF	94.9	93.8	90.2	90.4	92.3	0.99	4.5	2.4	91.6	0.81	4.1	2.9	16	LC
7N98FR	90.7	No DATA	94.7	89.2	91.5	0.81	4.2	2.9	93.3	1.22	4.1	2.9	13	LD
7YMGMH	85.1	87.5	89.7	86.9	87.3	-0.13	4.3	1.9	86.6	-0.37	4.2	1.6	16	LD
8KJDZ3	88.4	84.1	90.9	82.5 H	86.4	-0.31	5.8	3.9	84.9	-0.77	6.3	4.9	16	LZ
8XMLVZ	90.7	93.7 L	92.9 L	91.2	92.1	0.95	2.1	1.4	91.7	0.83	2.4	1.0 L	16	LD
93DE77	86.4	79.7 L	82.2	No DATA	82.8	-1.12	2.9	3.4	81.4	-1.61	3.5	4.3	13	LD
97YCGH	92.1	96.2	87.8	96.4	93.1	1.17	4.7	4.1	91.1	0.69	4.3	3.4	16	LD
9NDQXC	106.6 X	99.8 *	106.3 X	106.4 X	104.8	3.74 X	4.7	3.3	102.9	3.48 X	5.3	3.3	16	LX
9Q36GV	92.4	91.6	93.3	92.7	92.5	1.02	4.5	0.7	94.1	1.40	4.2	2.3	12	TH
AH7N7G	86.8	84.9	88.0	86.9	86.6	-0.27	3.1	1.3	85.1	-0.73	3.9	2.5	16	LD
C2DB8F	82.0	80.4	88.2	84.1	83.7	-0.93	4.8	3.4	82.6	-1.32	4.3	2.2	16	EM
C6BZL2	89.7	89.9	91.2	76.6 *	86.9	-0.21	4.8	6.9 H	86.4	-0.43	5.8	5.0	14	MB
DAZWNX	84.6	89.0	84.6	84.1	85.6	-0.50	4.4	2.3	88.5	0.08	4.6	3.0	16	LD
DHVW3P	89.0	No DATA	No DATA	88.2	88.6	0.16	4.2	0.5	85.5	-0.63	5.4	6.5	14	XX
DR2WK4	85.0	86.8	84.6 H	82.6	84.7	-0.69	5.0	1.7	85.9	-0.54	4.0	1.4	16	LD
E4UHHM	86.8	81.9	83.0	85.9	84.4	-0.76	4.4	2.3	86.9	-0.31	4.1	3.3	16	EM
E7GCZ9	87.5	88.5	86.2	89.1	87.8	0.00	4.9	1.3	87.9	-0.07	3.8	0.9 L	16	LD
E8RY29	87.7	87.4	87.0	85.3	86.8	-0.22	4.3	1.1	87.7	-0.11	3.6	1.7	16	LZ
ER22TL	92.1	94.1	93.4	95.0	93.6	1.28	4.5	1.2	97.5	2.20 *	4.5	3.9	16	LZ
ERGDEW	93.5	94.0	92.9 L	93.6	93.5	1.25	3.5	0.5	91.1	0.70	4.2	1.9	16	LD
FKCVGW	94.7	95.4	93.8	94.5	94.6	1.50	4.5	0.7	91.0	0.66	6.0	11.2 H	16	LC
FPM9WA	91.6	91.7	93.8	93.0	92.6	1.04	3.8	1.1	91.0	0.66	3.5	1.3	16	LD
J266HQ	89.2	90.2	89.9	89.5	89.7	0.41	3.1	0.4	89.4	0.28	5.5	0.4 L	16	LD
J9PX33	80.4	81.2	84.0	81.3	81.7	-1.35	4.4	1.6	84.9	-0.77	4.0	3.2	16	LC
JXPCRX	90.2	88.9	88.8	90.9	89.7	0.41	3.7	1.0	90.2	0.49	4.4	2.2	16	LC
JY6R6Y	84.1	83.5	83.9	79.6	82.8	-1.12	3.7	2.1	83.0	-1.22	3.9	1.5	16	EN



Containerboard Interlaboratory Testing Program
 Analysis 215
Ring Crush, 42 lb Linerboard - 42D3
 TAPPI Official Test Method T822

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
KNXA82	81.0	80.2	81.7	78.9 H	80.4	-1.64	6.7	1.2	88.5	0.07	5.7	6.3	16	MB
MT3WRF	91.8	92.3	91.3	90.9	91.6	0.82	3.7	0.6	91.9	0.89	3.2	0.8 L	16	LD
NR6XYZ	88.5	83.6	87.4	88.0	86.9	-0.21	3.9	2.2	87.9	-0.07	3.9	3.9	16	LC
PDH9EN	89.5	91.0 L	88.8	88.2	89.4	0.34	2.8	1.2	89.6	0.33	3.1	0.8 L	12	LZ
PUTRBU	83.7	82.6	68.9 X	87.0	80.5	-1.61	3.6	8.0 H	83.4	-1.13	3.7	6.1	16	LZ
PXMNXZ	89.2	94.2	92.7	90.6	91.7	0.85	4.8	2.2	90.4	0.53	5.3	3.1	15	LC
QQ4RNJ	68.5 X	67.9 X	78.0 *	74.1 *	72.1	-3.48 X	3.7	4.8	72.5	-3.72 X	4.1	5.0	16	MZ
R2H76Q	91.5 L	90.2 L	90.5 L	92.9 L	91.3	0.76	1.0	1.2	92.2	0.94	1.8	1.4	16	TD
RL7LRT	86.5	90.5	90.0	88.0	88.8	0.20	4.9	1.9	87.8	-0.09	3.6	2.0	14	LC
TNP42P	89.6	89.9	93.7	89.7	90.7	0.63	3.3	2.0	89.7	0.35	3.0	1.3	16	TH
UYKQRK	83.2	84.6	83.6	70.3 XH	80.4	-1.64	7.3	6.8 H	78.3	-2.34 *	8.0	6.0	12	LC
VDYDDM	86.2	89.4	88.5	87.9	88.0	0.03	4.1	1.3	89.5	0.30	4.3	4.7	16	LD
VWWHZW	95.6	94.7	93.6	96.3 L	95.1	1.60	3.2	1.2	94.3	1.44	3.6	1.6	12	LD
VX8MAE	84.6 L	84.9	84.7	84.3	84.6	-0.71	2.2	0.3 L	84.0	-1.00	2.6	1.7	16	TU
WB7NMF	88.1	89.6	89.4	84.6	87.9	0.02	4.4	2.3	87.8	-0.08	4.2	1.5	16	LD
WQ2943	83.7	82.6	82.3	83.9	83.1	-1.04	2.9	0.8	85.2	-0.71	3.4	1.7	16	LC
Y788AC	90.0	91.7	91.9	90.3	91.0	0.69	4.8	1.0	91.2	0.72	4.2	1.5	16	LD
ZJAVYK	84.3 L	85.1	84.4	86.3	85.0	-0.63	3.5	0.9	86.3	-0.44	3.5	1.4	16	LD
ZTF3EK	91.9	100.2 *H	95.0 H	94.1	95.3	1.65	8.8	3.5	90.6	0.58	6.6	4.6	15	LC
ZV3KBC	91.0	94.5	92.1	90.3 H	91.9	0.91	7.9	1.8	95.3	1.68	5.5	2.9	12	LD

Consensus (All Labs) Results									
Wk Mean	88.02	88.56	88.06	87.42	Month Mean	87.84	Grand Mean	88.19	
Avg SDr	4.26	4.46	4.45	4.62	Avg SD	4.46	Avg SD	4.38	
SD btwn Labs	4.16	5.32	4.59	5.22	SD btwn Labs	4.52	SD btwn Labs	4.23	
Labs Incl	52	52	52	52	SD btwn Wks	2.56	SD btwn Wks	3.80	
Labs Excl	3	1	2	2	Labs Incl	53	Labs Incl	53	
Labs not Rcvd	0	2	1	1					

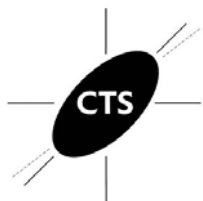


Containerboard Interlaboratory Testing Program
Analysis 215
Ring Crush, 42 lb Linerboard - 42D3
TAPPI Official Test Method T822

Report #585 (F)
June 2018

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
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	MZ	Messmer Buchel (model not specified)
TD	TMI Digital Crush Tester, Model 17-09	TH	TMI Compression Tester, Model 17-76
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program

Analysis 217

Report #585 (F)

June 2018

Ring Crush, 35 lb Linerboard - 35E1

TAPPI Official Test Method T822

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
26RLD8	73.6 H	67.5 H	68.8 H	67.7 H	69.4	-1.76	9.2	2.9	77.9	-0.05	6.3	8.1	11	LC
2WPJ3F	76.2	77.5	76.2	76.4	76.6	-0.28	2.6	0.6	76.8	-0.32	2.6	0.9 L	12	LD
3CK4J3	84.1	83.7	82.1	81.4	82.8	1.00	2.7	1.3	83.4	1.22	2.9	1.1 L	12	LZ
3X8QAH	67.6 *	68.5	69.6	62.5 *	67.0	-2.24 *	4.4	3.2	64.4	-3.16 X	4.0	4.4	8	LC
4WP2F4	78.3	77.5	75.9	80.9	78.2	0.05	3.2	2.1	77.6	-0.14	3.4	1.4	12	TH
67MJ9H	78.8	80.2	80.5	78.7	79.6	0.33	2.9	1.0	79.9	0.41	3.0	2.3	12	LD
6FCCF9	68.8 *	67.5	64.8 *	66.4	66.9	-2.28 *	4.0	1.7	66.9	-2.60 *	4.0	1.7	4	LC
6P7D3D	77.4	78.6 L	77.0	78.1 L	77.8	-0.04	2.1	0.7	77.9	-0.06	2.9	0.8 L	12	LD
6ZMZCE	85.3	84.9	79.8	83.6	83.4	1.12	3.0	2.5	75.9	-0.52	6.7	10.7 H	11	LZ
78HJRF	85.8	85.2	83.2	83.1	84.3	1.31	4.2	1.4	82.1	0.90	4.0	2.4	12	LC
7N98FR	78.0	No DATA	79.2	78.6	78.6	0.13	2.1	0.6	79.9	0.41	3.2	2.9	11	LD
7YMGMH	75.6	74.5	76.1	77.8	76.0	-0.41	3.5	1.4	75.6	-0.59	3.2	1.4	12	LD
8KJDZ3	80.5	70.6	81.9	69.7 H	75.7	-0.47	4.8	6.4 H	75.7	-0.56	4.5	6.3	12	LZ
8XMLVZ	82.9	81.5	82.2	82.8 L	82.4	0.91	2.1	0.6	81.9	0.86	1.9	0.6 L	12	LD
93DE77	74.2	69.3	73.5	No DATA	72.3	-1.16	2.9	2.7	69.0	-2.10 *	3.3	4.1	11	LD
97YCGH	80.8	82.1	79.7	83.2	81.4	0.71	4.9	1.5	81.0	0.66	4.1	2.1	12	LC
9NDQXC	90.5 *	91.2 *	90.3 *	89.4 *	90.3	2.55 *	4.4	0.7	87.7	2.19 *	5.1	4.5	12	LX
9Q36GV	78.1	79.1	80.1	80.9	79.5	0.33	3.5	1.2	80.4	0.51	3.5	1.6	12	TH
AH7N7G	74.3	78.2	76.6	74.5	75.9	-0.43	3.5	1.9	74.7	-0.79	3.8	3.3	12	LD
C2DB8F	71.5	70.8	73.7	72.5	72.1	-1.20	4.8	1.3	70.9	-1.67	3.8	1.7	12	EM
C6BZL2	81.8	77.5	72.9	64.7 *H	74.2	-0.77	7.1	7.3 H	76.2	-0.46	6.0	5.6	11	MB
DAZWNX	81.5	81.6	74.9	76.0	78.5	0.11	2.7	3.6	81.1	0.68	3.3	3.6	12	LD
DHVW3P	76.4	No DATA	No DATA	73.2	74.8	-0.64	4.1	2.3	78.6	0.09	3.9	3.0	10	XX
DR2WK4	75.7	73.4	76.7	76.2	75.5	-0.51	3.0	1.4	75.3	-0.65	2.9	1.2	12	LD
E4UHHM	76.9	74.4	78.6	77.9	77.0	-0.20	3.4	1.8	78.9	0.18	3.3	2.1	12	EM
E7GCZ9	81.1	79.1	79.8	79.2	79.8	0.38	3.2	0.9	80.2	0.47	2.9	0.8 L	12	LD
E8RY29	78.2	80.9	81.0	78.1	79.6	0.33	3.6	1.6	79.3	0.27	3.2	1.3	12	LG
ER22TL	78.2	80.6	81.1	81.5	80.4	0.49	4.3	1.5	83.4	1.22	4.2	3.9	8	LZ
ERGDEW	79.2	79.5	79.4	80.7	79.7	0.36	3.0	0.7	79.2	0.24	3.2	0.9 L	12	LD
FKCVGW	85.6	90.1 *	89.1 *	86.8	87.9	2.05 *	3.1	2.1	84.9	1.55	5.2	10.2 H	12	LC
FPM9WA	78.8	80.6	82.4	80.7	80.6	0.55	2.8	1.5	80.5	0.53	2.7	1.4	12	LD
J266HQ	78.8	80.2	80.2	78.3	79.4	0.30	3.4	1.0	78.9	0.17	4.4	0.7 L	12	LD
J9PX33	70.5	74.3	75.0	73.3	73.3	-0.96	2.9	2.0	76.3	-0.44	3.3	2.9	12	LC
JXPCRX	83.4	81.6	81.2	82.6	82.2	0.88	3.4	1.0	81.8	0.84	3.7	0.8 L	12	LC
JY6R6Y	75.2	76.7 L	74.6	72.8	74.8	-0.64	3.2	1.6	75.7	-0.57	2.9	1.4	12	EN



Containerboard Interlaboratory Testing Program
 Analysis 217
Ring Crush, 35 lb Linerboard - 35E1
 TAPPI Official Test Method T822

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
KNXA82	72.6	64.1 *H	65.8 *H	75.5	69.5	-1.74	7.6	5.4 H	75.7	-0.56	6.5	8.0	8	MB
MT3WRF	81.9	80.6	81.5	81.4	81.3	0.69	3.0	0.5	81.2	0.70	3.2	0.6 L	12	LD
NR6XYZ	74.6	79.8	79.7	78.5	78.1	0.04	3.7	2.5	81.1	0.68	3.4	4.2	12	LC
PDH9EN	79.4	80.9	80.8	78.8	80.0	0.42	3.3	1.0	84.3	1.41	3.2	5.9	12	LZ
PUTRBU	77.4	70.3	60.6 X	78.9	71.8	-1.26	3.5	8.4 H	72.0	-1.43	3.6	6.1	12	LZ
PXMNXZ	83.6	83.8	77.9	82.1	81.9	0.80	3.7	2.7	79.9	0.40	4.1	3.6	11	LC
QQ4RNJ	58.5 X	57.7 X	65.2 *	65.7	61.8	-3.33 X	4.2	4.3	59.0	-4.42 X	4.7	5.4	12	MB
R2H76Q	74.8	69.3 L	71.7 L	70.1 L	71.5	-1.34	1.7	2.5	71.7	-1.49	2.6	1.8	12	TD
RL7LRT	76.3	78.2	77.1	77.5	77.3	-0.14	3.5	0.8	75.8	-0.55	3.0	2.0	10	LC
TNP42P	77.2	77.7	77.2	78.9	77.8	-0.04	3.4	0.8	77.0	-0.26	3.0	1.6	12	TH
UYKQRK	63.5 XH	63.5 *	63.2 *H	61.6 *H	63.0	-3.08 X	8.4	0.9	70.4	-1.78	6.9	7.5	12	LC
VDYDDM	76.8	76.8	80.2	80.4	78.6	0.12	2.8	2.0	73.7	-1.03	3.1	16.4 H	12	LD
VWWHZW	85.8	84.1	84.8	85.3	85.0	1.45	3.2	0.7	83.7	1.28	3.4	1.6	12	LD
VX8MAE	74.7	74.4	74.6 L	74.3 L	74.5	-0.71	1.9	0.2 L	73.8	-1.01	2.1	1.4	12	TU
WB7NMF	79.1	80.2	79.1	76.2	78.7	0.15	3.5	1.7	77.6	-0.14	4.2	1.7	12	LD
WQ2943	75.8	75.4	77.2	73.7	75.5	-0.50	3.0	1.5	76.9	-0.29	3.3	1.5	12	LC
Y788AC	81.3	82.0	81.3	80.8	81.3	0.70	2.9	0.5	81.2	0.70	2.7	0.6 L	12	LD
ZJAVYK	75.2	75.0	74.8	74.3	74.8	-0.65	3.0	0.4 L	75.6	-0.60	3.1	0.8 L	12	LD
ZTF3EK	84.2	74.9	80.1	81.3	80.1	0.45	5.5	3.9	77.8	-0.09	5.7	3.7	12	LC
ZV3KBC	85.1	86.7	88.7 *	84.1	86.2	1.69	4.6	2.0	87.5	2.16 *	4.1	1.8	12	LD

Consensus (All Labs) Results														
Wk Mean	78.48	77.63	77.72	77.21	Month Mean	77.95	Grand Mean	78.16						
Avg SDr	3.80	4.19	3.68	4.12	Avg SD	3.85	Avg SD	3.91						
SD btwn Labs	4.64	6.03	5.66	5.99	SD btwn Labs	4.86	SD btwn Labs	4.34						
Labs Incl	53	52	53	54	SD btwn Wks	2.56	SD btwn Wks	4.42						
Labs Excl	2	1	1	0	Labs Incl	53	Labs Incl	53						
Labs not Rcvd	0	2	1	1										



Containerboard Interlaboratory Testing Program
Analysis 217
Ring Crush, 35 lb Linerboard - 35E1
TAPPI Official Test Method T822

Report #585 (F)
June 2018

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LG	L&W 753	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
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program

Analysis 223

Report #585 (F)

June 2018

STFI, 42 lb Linerboard - 42D3

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
26RLD8	21.2 H	20.4 *H	22.3 H	22.4 H	21.6	-1.29	3.8	0.9	22.5	-0.18	3.7	1.0	15	LH
2WPJ3F	22.6	22.4	22.9	21.9	22.5	-0.19	1.6	0.4	22.2	-0.51	1.7	0.5	16	LA
3DWWHC	24.8 *	24.0	24.3 *	24.3	24.3	2.21 *	1.9	0.4	24.3	2.22 *	2.0	0.7	12	XX
3X8QAH	23.3	23.0	25.8 X	22.9	23.7	1.42	1.7	1.4	23.0	0.51	1.6	1.3	8	XX
4WP2F4	22.3 L	22.4 L	22.5	21.6	22.2	-0.54	1.1	0.4	22.4	-0.32	1.0	0.3	16	TT
6NAZFL	23.9	25.3 X	23.7	21.6 H	23.6	1.27	2.6	1.6	23.6	1.32	2.6	1.6	4	LU
6XUBK7	23.3	22.6	23.2 L	22.3	22.8	0.29	1.4	0.5	23.0	0.58	1.8	1.2	16	LA
6ZMZCE	22.4	21.7	21.1	22.5	21.9	-0.84	2.0	0.7	21.6	-1.30	2.0	0.5	15	LW
78HJRF	23.7	23.4	23.0	23.1	23.3	0.88	1.5	0.3	22.9	0.37	1.6	0.4	16	ID
7N98FR	21.2	No DATA	22.3	21.9	21.8	-0.99	1.4	0.6	22.7	0.16	1.9	1.1	13	LZ
7YMGMH	21.7	22.8	22.1	21.3	22.0	-0.78	1.9	0.6	22.2	-0.57	1.9	0.6	16	LA
8AZXVF	22.6	21.9	22.1 L	23.2	22.4	-0.20	1.7	0.6	22.3	-0.42	1.8	0.5	16	LW
8J8K2U	22.5	23.8	23.4	23.7	23.3	0.94	2.0	0.6	23.0	0.52	1.8	0.5	12	LU
8KJDZ3	21.5	21.4	21.3	21.0	21.3	-1.64	1.8	0.2	21.5	-1.48	1.8	1.2	16	LA
8XMLVZ	20.7 *	20.8	21.2	21.3	21.0	-2.04 *	1.3	0.3	21.0	-2.12 *	1.5	0.4	16	LY
97YCGH	23.9	23.2	23.5	24.7 *	23.8	1.54	2.0	0.7	23.3	0.95	2.1	0.8	16	LA
9AZ34W	22.4	22.6	21.6	23.7 H	22.6	-0.05	2.4	0.9	23.1	0.65	2.2	0.8	16	XX
9Q36GV	21.7	23.6	23.0	21.9	22.5	-0.09	1.8	0.9	22.8	0.24	2.0	1.7	12	LH
AH7N7G	21.3	23.5	22.2	22.9	22.5	-0.15	1.6	0.9	22.8	0.29	1.9	1.0	16	LZ
BR94RF	20.8	21.1	20.9	21.3	21.0	-2.01 *	1.5	0.2	21.1	-2.03 *	1.6	0.5	8	LH
C6BZL2	22.7	23.1	23.4	23.9	23.2	0.81	1.6	0.5	23.2	0.77	1.7	0.9	14	LA
DAZWNX	21.8	23.0	24.2	27.6 XH	24.1	1.95 *	2.1	2.5 H	23.2	0.84	1.9	1.4	16	LU
DHVW3P	21.7	No DATA	No DATA	22.6	22.2	-0.56	1.9	0.7	22.4	-0.33	2.2	1.3	14	XX
DR2WK4	21.4	22.1	21.4	21.6	21.6	-1.26	1.8	0.4	21.5	-1.41	1.8	0.4	16	LU
E7GCZ9	23.3	22.7	22.7	22.8	22.9	0.34	1.7	0.3	22.6	-0.05	1.8	0.8	16	LA
E8RY29	21.4	22.6	21.3	21.7	21.8	-1.07	1.8	0.6	21.8	-1.12	1.8	0.4	16	LU
ERGDEW	22.4	22.1	22.6	22.5	22.4	-0.27	1.7	0.2	22.3	-0.41	1.7	0.3	16	LY
FPM9WA	23.5	21.4	22.7	23.7	22.8	0.25	1.8	1.0	22.7	0.15	1.9	0.8	16	LY
J9PX33	22.6	22.5	22.6	21.8	22.4	-0.28	2.2	0.4	22.0	-0.77	1.9	0.7	16	LA
JQ8W8Z	21.5	22.4	21.9	22.2 L	22.0	-0.76	1.7	0.4	27.6	6.58 X	2.0	10.2 H	16	LA
JXPCRX	22.8	22.1	22.6	22.6	22.5	-0.13	2.2	0.3	22.4	-0.30	2.0	0.3	16	LU
JY6R6Y	22.3	21.1	20.4 *	21.5	21.3	-1.62	1.9	0.8	21.3	-1.76	1.9	0.6	16	LY
KNXA82	22.8	22.2	21.9	23.4	22.6	-0.03	2.2	0.6	22.6	0.04	1.8	0.7	16	BK
LMWZ7V	22.4	22.9	23.8	22.6	22.9	0.38	1.9	0.6	22.7	0.16	1.8	0.6	16	LA
MT3WRF	22.9 L	22.8	22.9	22.7	22.8	0.29	1.4	0.1 L	22.5	-0.09	1.4	0.2 L	16	LA



Containerboard Interlaboratory Testing Program

Analysis 223

Report #585 (F)

June 2018

STFI, 42 lb Linerboard - 42D3

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
NR6XYZ	22.5	22.8	21.7 H	23.4	22.6	-0.02	2.5	0.7	22.3	-0.36	1.9	0.6	12	LA
PUTRBU	21.3	21.0	20.9	21.5	21.2	-1.81	1.8	0.3	21.5	-1.43	1.8	0.6	16	LZ
PXMNXZ	22.9	23.2	23.8	24.1	23.5	1.09	1.7	0.6	23.5	1.23	1.8	0.5	15	LW
QMLPJY	22.9	21.3	21.6	23.7	22.4	-0.31	2.2	1.1	22.7	0.08	1.9	0.8	16	LH
QWD2ZL	24.1	23.9	22.4	22.7	23.3	0.84	2.0	0.9	24.2	2.08 *	1.9	1.0	16	LZ
RL7LRT	23.8	22.8	23.1	21.6	22.8	0.29	2.1	0.9	22.6	0.03	2.2	0.7	14	LW
RRBGBT	22.4	23.4	23.5	25.2 *	23.6	1.32	2.1	1.2	23.1	0.69	1.9	1.0	12	LH
TN89JM	22.5	21.3	23.0	21.3	22.0	-0.71	2.0	0.9	22.0	-0.75	2.0	0.9	4	LA
UXE64K	23.2	24.4 *	23.3	20.9 L	22.9	0.44	2.0	1.4	24.0	1.84	2.1	1.2	12	LU
UY772V	23.6	21.7	21.8	26.7 X	23.4	1.07	2.0	2.3 H	22.8	0.23	2.0	1.3	16	LA
UYKQRK	23.2	23.0 H	23.7	23.1	23.2	0.80	2.4	0.3	24.2	2.09 *	2.1	0.9	12	LU
VDYDDM	22.0	23.0	23.0 H	23.1	22.8	0.23	2.1	0.5	22.4	-0.21	1.9	0.6	16	LA
VWWHZW	23.4	23.0	23.0	23.5	23.2	0.76	1.4	0.3	23.1	0.71	1.4	0.3	12	LH
WB7NMF	21.4	21.9	22.3	22.0	21.9	-0.90	1.9	0.4	22.2	-0.57	1.9	0.7	16	LY
Y788AC	23.0 H	23.2	23.0	23.1	23.1	0.60	2.2	0.1 L	23.0	0.56	2.0	0.4	16	LA
Z9NXP8	22.6	22.5	22.1 L	22.9	22.5	-0.08	1.4	0.3	22.5	-0.10	1.1	0.2 L	16	TT
ZJAVYK	22.1	21.9	22.4	22.2	22.2	-0.53	1.4	0.2	21.8	-1.05	1.6	0.5	16	BK
ZTF3EK	23.9 H	22.8	22.5	24.7 *	23.5	1.11	2.3	1.0	22.1	-0.71	2.1	1.5	15	LA
ZVRG9L	28.5 X	28.8 X	28.2 X	28.2 X	28.4	7.35 X	1.9	0.3	23.4	1.05	2.1	3.3 H	15	LW

Consensus (All Labs) Results														
Wk Mean	22.52	22.48	22.50	22.62	Month Mean	22.60	Grand Mean	22.60						
Avg SDr	1.86	2.00	1.98	1.93	Avg SD	1.94	Avg SD	1.92						
SD btwn Labs	0.93	0.89	0.90	1.03	SD btwn Labs	0.79	SD btwn Labs	0.76						
Labs Incl	53	50	51	51	SD btwn Wks	0.83	SD btwn Wks	0.95						
Labs Excl	1	2	2	3	Labs Incl	53	Labs Incl	53						
Labs not Rcvd	0	2	1	0										

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	ID	IDM Compression Tester
LA	L&W Autoline	LH	L&W 282
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 225

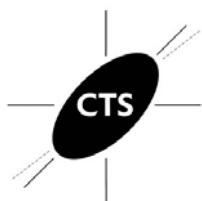
Report #585 (F)

June 2018

STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
26RLD8	20.8 H	21.5 H	22.4 H	22.4 H	21.8	-0.56	3.7	0.8	22.7	0.52	3.6	1.6	11	LH
2WPJ3F	22.8	22.2	21.7	21.4	22.0	-0.26	1.5	0.6	22.0	-0.49	1.4	0.7	12	LA
3DWWHC	23.3	23.3	23.7	23.9	23.6	1.52	1.6	0.3	23.7	1.76	1.7	0.7	12	XX
3X8QAH	23.3	23.4	24.6 *	23.2	23.6	1.61	1.3	0.6	22.7	0.48	1.4	1.1	8	XX
4WP2F4	21.9 L	21.6	21.7	21.1	21.6	-0.77	1.1	0.3	21.6	-0.96	1.0	0.2 L	12	TT
6NAZFL	23.3	24.0	22.4 H	23.3	23.3	1.20	2.0	0.7	23.3	1.21	2.0	0.7	4	LU
6XUBK7	20.7	22.5	20.3 *	22.3	21.5	-0.92	1.8	1.1 H	22.0	-0.38	1.8	1.2	12	LA
6ZMZCE	21.8	21.1	20.9	21.7	21.4	-1.02	2.0	0.5	21.1	-1.57	1.7	0.8	11	LW
78HJRF	23.0	22.7	23.4	23.4 L	23.1	0.99	1.4	0.3	22.7	0.44	1.4	0.4	12	ID
7N98FR	20.7	No DATA	21.4	20.7	20.9	-1.54	1.6	0.4	22.2	-0.16	1.9	1.3	11	LZ
7YMGMH	22.8	21.7	21.6 L	21.6	21.9	-0.41	1.4	0.6	22.1	-0.33	1.5	0.5	12	LA
8AZXVF	21.8	21.1	21.4	22.7	21.7	-0.64	1.7	0.7	21.9	-0.61	1.6	0.6	12	LW
8J8K2U	22.9	24.0	24.1 *	23.1	23.5	1.49	1.6	0.6	23.0	0.85	1.6	0.7	8	LU
8KJDZ3	20.8	22.5	21.6	22.6	21.9	-0.43	1.7	0.9	21.3	-1.36	1.5	0.8	12	LA
8XMLVZ	20.7	20.7	20.6	20.8	20.7	-1.83	1.4	0.1 L	20.9	-1.82	1.4	0.4	12	LY
97YCGH	23.1 H	22.8	22.6	22.4	22.7	0.57	2.0	0.3	22.6	0.37	1.7	0.4	12	LA
9AZ34W	23.4	23.2	23.7	24.0	23.6	1.55	2.0	0.3	23.4	1.36	1.9	1.0	12	LY
9Q36GV	21.7	20.8	21.5	21.7	21.4	-0.97	1.5	0.4	22.8	0.65	1.7	2.4 H	12	LH
AH7N7G	21.0	22.5	22.6	22.1	22.1	-0.23	1.8	0.7	22.4	0.12	1.7	0.9	12	LZ
BR94RF	21.6	22.0	20.9	21.2 L	21.4	-0.96	1.5	0.5	22.7	0.41	1.8	1.5	8	LH
C6BZL2	20.6	21.4	21.7	21.6	21.3	-1.09	1.6	0.5	22.2	-0.15	1.6	1.3	11	LA
DAZWNX	22.0	23.1	23.1	22.6	22.7	0.54	2.0	0.5	22.7	0.45	1.8	0.6	12	LU
DHVW3P	22.0	No DATA	No DATA	23.4	22.7	0.54	2.0	1.0	22.8	0.63	1.9	2.5 H	10	XX
DR2WK4	21.1	21.6	21.3	20.9	21.2	-1.22	1.5	0.3	21.4	-1.27	1.6	0.3	12	LU
E7GCZ9	21.3	22.6	23.0	22.2	22.3	0.02	1.7	0.8	22.2	-0.16	1.5	0.9	12	LW
E8RY29	21.3	21.2 L	21.3	21.0	21.2	-1.22	1.5	0.2	21.5	-1.12	1.5	0.4	12	LW
ERGDEW	22.8	22.6	22.7	22.5	22.7	0.50	1.6	0.1	22.2	-0.15	1.6	0.4	12	LU
FPM9WA	21.8	21.4	22.4	21.6	21.8	-0.52	1.4	0.4	22.1	-0.36	1.5	0.5	12	LY
J9PX33	21.3	21.7	20.8	21.7	21.4	-1.02	1.7	0.4	21.3	-1.29	1.8	0.6	12	LA
JQ8W8Z	22.1	22.5	22.2	21.5	22.0	-0.24	1.8	0.4	21.7	-0.88	1.5	0.7	12	LA
JXPCRX	22.0	22.8	21.7	22.0	22.1	-0.13	1.6	0.5	22.3	-0.09	1.6	0.4	12	LU
JY6R6Y	20.8	20.8	21.0	21.0	20.9	-1.60	1.5	0.1	21.0	-1.73	1.6	0.3	12	LY
KNXA82	22.2	22.3	20.9	20.6	21.5	-0.89	1.7	0.9	22.2	-0.22	1.7	1.1	8	BK
LMWZ7V	22.3	23.1	23.0	23.1	22.9	0.71	1.6	0.4	22.4	0.02	1.6	0.5	12	LA
MT3WRF	22.1	22.1	22.1	22.2	22.1	-0.14	1.5	0.0 L	22.1	-0.37	1.5	0.1 L	12	LA



Containerboard Interlaboratory Testing Program

Analysis 225

Report #585 (F)

June 2018

STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
NR6XYZ	21.7 H	22.2	22.3	21.3	21.9	-0.43	2.3	0.5	21.8	-0.66	1.6	0.4	12	LA
PUTRBU	21.8	20.9	21.0	20.4 *	21.0	-1.47	1.4	0.6	21.1	-1.60	1.5	0.5	12	LZ
PXMNXZ	22.6	22.6	22.5	23.5	22.8	0.63	1.5	0.5	23.2	1.06	1.7	0.5	11	LW
QMLPJY	23.7	22.4	22.9	22.6	22.9	0.73	1.9	0.6	23.1	0.95	1.9	0.6	12	LH
QWD2ZL	25.3 X	23.1	23.0	23.5	23.7	1.72	1.8	1.1	24.2	2.35 * 3.8	0.8	12	LZ	
RL7LRT	23.3	22.0	22.8	22.1	22.5	0.34	1.8	0.6	22.0	-0.41	1.7	0.6	10	LW
RRBGBT	23.8	24.8 *	23.0	23.8	23.8	1.82	1.4	0.7	23.2	1.18	1.4	0.9	12	LH
TN89JM	22.7	22.9	21.9	23.0	22.6	0.42	1.6	0.5	22.6	0.35	1.6	0.5	4	LA
UXE64K	22.8 H	23.7	23.8	23.1	23.3	1.28	2.1	0.5	23.4	1.42	1.9	0.7	12	LU
UY772V	22.2	22.2	22.3	21.7	22.1	-0.15	1.5	0.3	22.3	-0.09	1.7	0.4	12	LA
UYKQRK	23.6	23.4	23.0	23.8	23.4	1.40	1.8	0.3	23.8	1.92	1.8	0.6	12	LU
VDYDDM	22.1	21.6	22.2	23.3	22.3	0.06	1.4	0.7	22.1	-0.28	1.5	0.7	12	LA
VWWHZW	23.1	22.9	22.7	23.4	23.0	0.91	1.4	0.3	22.7	0.52	1.4	0.3	12	LH
WB7NMF	21.7 L	22.0	22.2	21.3	21.8	-0.54	1.5	0.4	21.9	-0.56	1.5	0.4	12	LY
Y788AC	22.9	22.9	22.9	22.6	22.8	0.67	1.3	0.1	22.4	0.02	1.4	0.7	12	LA
Z9NXP8	21.9	22.0 L	22.1 L	22.2 L	22.1	-0.23	1.0	0.1	21.9	-0.59	0.9	0.2 L	12	TT
ZJAVYK	20.6 L	21.6	21.3	21.6	21.3	-1.14	1.3	0.5	21.1	-1.58	1.3	0.5	12	BK
ZTF3EK	23.6	22.9	23.6	23.6	23.4	1.37	1.9	0.4	22.5	0.14	1.7	1.0	12	LA
ZVRG9L	28.1 X	28.2 X	27.4 X	27.5 X	27.8	6.48 X	1.7	0.4	23.9	2.06 * 2.1	3.0 H	12	LW	

Consensus (All Labs) Results									
Wk Mean	22.13	22.33	22.22	22.27	Month Mean	22.25	Grand Mean	22.34	
Avg SDr	1.78	1.72	1.68	1.64	Avg SD	1.71	Avg SD	1.75	
SD btwn Labs	0.94	0.91	0.97	0.98	SD btwn Labs	0.86	SD btwn Labs	0.77	
Labs Incl	52	51	52	53	SD btwn Wks	0.55	SD btwn Wks	0.95	
Labs Excl	2	1	1	1	Labs Incl	53	Labs Incl	54	
Labs not Rcvd	0	2	1	0					

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	ID	IDM Compression Tester
LA	L&W Autoline	LH	L&W 282
LU	L&W 52 without moisture correction (was 53)	LW	L&W 53 with moisture correction (was 53M)
LY	L&W 152 (was 52M)	LZ	L&W (model not specified)
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab



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

Report #585 (F)
June 2018

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
26RLD8	108.2	-2.14 *	11.21	114.9	-2.07 *	10.50	3	EV
6ZMZCE	172.4	0.18	16.82	172.5	0.31	7.63	4	EV
7N98FR	157.5	-0.36	20.90	158.7	-0.26	8.72	4	LA
8KJDZ3	146.4	-0.76	14.80	139.4	-1.06	30.49 H	4	LA
97YCGH	162.2	-0.19	30.83	154.4	-0.44	5.36	4	LA
C6BZL2	197.4	1.08	19.43	183.5	0.76	14.63	4	LA
DHVV3P	234.0	2.40 *	37.82 H	209.8	1.85	27.10	4	EV
DR2WK4	179.3	0.43	11.74	177.2	0.50	1.84 L	4	EV
E7GCZ9	181.4	0.51	28.15	166.7	0.07	13.20	3	LA
JY6R6Y	174.6	0.26	14.28	178.2	0.54	2.99	4	EV
KNXA82	210.7	1.56	36.73 H	219.8	2.26 *	19.88	4	EV
LMWZ7V	187.4	0.72	20.42	180.9	0.65	7.57	4	LA
MT3WRF	165.4	-0.07	16.47	167.1	0.09	3.10	4	XX
NR6XYZ	184.7	0.62	35.08 H	184.3	0.80	3.38	3	LA
PUTRBU	151.5	-0.58	10.56	150.9	-0.58	15.06	4	EV
QWD2ZL	176.0	0.31	22.48	175.6	0.44	13.63	4	XX
RL7LRT	171.1	0.13	9.09 L	168.1	0.13	6.05	4	XX
TN89JM	152.8	-0.53	15.11	152.8	-0.50	0.00	1	LA
UXE64K	159.2	-0.30	17.47	155.7	-0.39	4.39	3	EV
UYKQRK	122.2	-1.63	15.88	130.3	-1.43	7.60	3	EV
ZTF3EK	146.6	-0.75	14.87	151.9	-0.54	28.27 H	4	LA
ZV3KBC	142.7	-0.89	12.19	138.0	-1.12	5.66	3	EV

Consensus (All Labs) Results			
Month Mean	167.44	Grand Mean	165.03
Avg SD	21.41	Avg SD Months	14.09
SD btwn Labs	27.69	SD btwn Labs	24.24
Labs Incd	22	Labs Incd	22

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 - 42D3
 TAPPI Official Test Method T538

Report #585 (F)
June 2018

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
6XUBK7	365.2	0.19	8.66	365.8	0.02	0.64	L 4	XX
7YMGMH	356.0	-0.83	6.48	356.4	-0.98	5.40	4	LA
AH7N7G	378.2	1.62	11.76	380.5	1.59	7.73	4	XX
ER22TL	354.5	-0.99	7.78	360.6	-0.53	5.44	4	XX
JPD9P6	352.5	-1.21	6.87	354.7	-1.16	2.74	4	LA
JXPCRX	367.6	0.45	9.22	372.3	0.71	3.44	4	XX
VDYDDM	361.6	-0.21	8.38	359.8	-0.62	6.03	4	LA
Y788AC	372.4	0.98	13.25	374.8	0.99	2.63	4	XX

Consensus (All Labs) Results				
Month Mean		363.50	Grand Mean	365.59
Avg SD		9.31	Avg SD Months	4.76
SD btwn Labs		9.06	SD btwn Labs	9.35
Labs Incd		8	Labs Incd	8

Key to Instrument Codes Reported by Participants

LA L & W Roughness Sheffield - Autoline
 XX Instrument make/model not specified by lab



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

Report #585 (F)
June 2018

WebCode	Monthly Results				Cumulative Results				Inst	
	Mean	CPV	SD		Mean	CPV	SD Months	Months		
2WPJ3F	184.4	0.66	11.50		177.4	0.58	9.49	3	TM	
3X8QAH	122.7	-1.43	1.70	L	138.5	-0.91	22.41	2	SC	
6P7D3D	180.7	0.53	2.76		175.3	0.50	4.80	3	SC	
6XUBK7	123.4	-1.40	5.86		107.5	-2.10 *	13.75	3	SC	
8J8K2U	164.6	-0.01	5.94		162.1	-0.01	4.98	3	TM	
8KJDZ3	152.0	-0.44	14.61	H	144.5	-0.68	13.40	3	TM	
B44HPQ	174.8	0.34	3.96		162.4	0.00	12.83	3	TM	
DAZWNX	173.2	0.28	9.04		147.1	-0.58	34.36	H	3	HZ
DR2WK4	147.4	-0.59	1.14	L	155.7	-0.26	7.26	3	TM	
E7GCZ9	207.4	1.44	11.41		199.6	1.43	7.35	3	HY	
J9PX33	155.4	-0.32	6.88		153.9	-0.32	5.27	3	TM	
JXPCRX	181.0	0.54	2.90		186.6	0.93	6.85	3	HY	
NR6XYZ	217.6	1.78	8.20		219.4	2.19 *	2.55	2	SC	
QWD2ZL	122.0	-1.45	7.65		151.8	-0.40	26.47	3	TM	
UXE64K	118.0	-1.59	8.72		117.4	-1.72	3.30	3	TM	
UYKQRK	141.0	-0.81	4.06		147.9	-0.55	7.22	3	TM	
VDYDDM	181.0	0.55	3.02		178.5	0.62	2.38	L	3	SC
WB7NMF	197.6	1.11	9.15		181.7	0.74	14.45	3	XX	
Y788AC	68.0	-3.28 X	1.13	L	65.3	-3.72 X	4.80	3	LZ	
ZTF3EK	195.0	1.02	7.91		168.3	0.23	36.30	H	3	SC
ZV3KBC	158.8	-0.21	1.64	L	171.2	0.34	17.54	2	HY	

Consensus (All Labs) Results			
Month Mean	164.90	Grand Mean	162.34
Avg SD	7.37	Avg SD Months	16.04
SD btwn Labs	29.55	SD btwn Labs	26.11
Labs Incl	20	Labs Incl	20

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	162.01	29.89	2.89	17
Modified Scott Bond Mechanics	194.20	18.67	29.30	2

Analysis Notes

Y788AC - Method used is not covered in this test. Data excluded from consensus calculation.



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

Report #585 (F)
June 2018

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), 56 lb Linerboard - 56A
 TAPPI Official Test Method T815

Report #585 (F)
June 2018

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SD	Mean	CPV	SD Months	Months
2WPJ3F	23.6	-1.12	1.74	21.4	-2.10 *	1.64	4
3DWWHC	26.2	-0.35	5.16 H	28.2	0.47	2.30	3
6XUBK7	28.8	0.39	1.30	28.0	0.39	1.57	4
6ZMZCE	26.4	-0.30	2.30	25.9	-0.39	0.87	4
8KJDZ3	30.2	0.80	0.84	28.0	0.39	1.73	4
AH7N7G	31.7	1.23	1.82	31.9	1.89	2.13	4
DR2WK4	31.8	1.26	3.56	28.7	0.67	3.25	4
E7GCZ9	25.0	-0.70	1.22	24.1	-1.10	1.17	4
FKCVGW	29.9	0.71	0.74	27.7	0.28	1.49	4
JXPCR X	24.6	-0.82	1.84	24.5	-0.91	0.40	4
JY6R6Y	29.0	0.44	1.74	27.7	0.31	1.38	4
LMWZ7V	30.0	0.73	3.82	29.0	0.79	1.38	4
MT3WRF	26.4	-0.30	0.55 L	26.2	-0.28	0.23 L	4
NAL3KR	30.4	0.86	2.07	28.7	0.66	2.82	4
NR6XYZ	29.2	0.51	4.21	30.2	1.26	0.91	3
PUTRBU	24.0	-0.99	1.58	25.1	-0.71	0.91	4
PXMNXZ	26.0	-0.41	2.35	28.1	0.43	1.75	4
QMLPJY	27.4	-0.01	1.82	28.7	0.67	0.89	4
QWD2ZL	21.2	-1.81	0.91	22.6	-1.65	1.30	4
RL7LRT	23.4	-1.16	1.67	25.0	-0.74	2.16	4
UXE64K	30.9	1.00	2.92	27.2	0.11	3.30	3
UY772V	30.6	0.91	3.97	29.9	1.13	2.24	4
UYKQRK	29.3	0.54	2.51	27.6	0.24	1.80	3
WB7NMF	22.4	-1.45	2.70	22.3	-1.79	3.74	4
Y788AC	33.6	1.78	0.89	29.5	0.98	3.35	4
ZTF3EK	21.4	-1.74	1.52	24.3	-1.00	2.67	4

Consensus (All Labs) Results			
Month Mean	27.43	Grand Mean	26.93
Avg SD	2.44	Avg SD Months	2.04
SD btwn Labs	3.47	SD btwn Labs	2.62
Labs Incl	26	Labs Incl	26

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Containerboard Interlaboratory Testing Program
Analysis 237

Report #585 (F)
June 2018

Air Resistance, 36 lb Linerboard - 36Z

TAPPI Official Test Method T460

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
2WPJ3F	52.7	0.67	1.01	51.8	0.49	0.84	3	LA
3DWWHC	41.7	-4.17 X	2.72	41.9	-1.34	1.31	3	LA
6ZMZCE	37.3	-6.14 X	1.81	35.7	-2.48 *	2.07	3	XX
8KJDZ3	52.4	0.51	1.24	51.7	0.48	0.81	3	LP
8XMLVZ	49.2	-0.89	1.03	48.8	-0.06	0.35 L	3	LP
93DE77	51.5	0.12	2.59	48.6	-0.10	3.43	3	GG
97YCGH	49.7	-0.66	1.88	51.2	0.39	1.37	3	LA
AH7N7G	53.5	1.02	1.83	52.1	0.54	1.28	3	XX
DHVW3P	48.9	-1.02	1.58	48.7	-0.09	0.89	3	LW
E7GCZ9	54.6	1.49	0.97 L	54.6	1.01	0.50 L	3	LP
JXPCR	52.2	0.43	2.69	51.9	0.50	0.30 L	3	TP
KNXA82	50.7	-0.23	2.33	53.7	0.85	4.15	3	XX
LNU8XM	48.9	-1.02	3.18	50.5	0.25	1.39	3	XX
MT3WRF	51.2	-0.01	1.11	53.3	0.76	1.87	3	LA
NAL3KR	51.4	0.07	2.77	54.9	1.07	5.64	3	GA
NR6XYZ	51.9	0.28	2.61	52.0	0.52	0.15	2	LA
PDH9EN	48.8	-1.06	1.87	49.3	0.03	0.71	2	XX
PUTRBU	49.2	-0.90	1.32	39.5	-1.79	17.74 H	3	LP
PXMNXZ	50.0	-0.54	3.80 H	49.3	0.02	0.70 L	3	LP
QWD2ZL	46.0	-2.30 *	4.06 H	38.7	-1.92 *	7.14	3	TD
UK6PWF	52.2	0.44	2.59	50.7	0.29	1.38	3	TL
UXE64K	42.9	-3.68 X	1.85	43.0	-1.13	0.97	3	LA
UYKQRK	53.7	1.08	1.11	53.7	0.84	0.00	1	LA
VDYDDM	55.4	1.84	1.88	55.6	1.19	0.70 L	3	LA
WB7NMF	51.7	0.21	2.60	51.8	0.50	0.45 L	3	LP
Y62MLC	49.0	-0.98	0.62 L	49.2	0.01	0.21 L	3	LP
Y788AC	54.5	1.45	2.72	53.4	0.80	1.09	3	LA
ZTF3EK	31.8	-8.54 X	1.40	40.2	-1.66	7.25	3	LA

Consensus (All Labs) Results

Month Mean	51.22	Grand Mean	49.13
Avg SD	2.25	Avg SD Months	4.31
SD btwn Labs	2.27	SD btwn Labs	5.41
Labs Incl	24	Labs Incl	28



Containerboard Interlaboratory Testing Program
Analysis 237

Report #585 (F)
June 2018

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
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 #585 (F)
June 2018

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM92

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
3CK4J3	59.7	59.8	L 60.7	L 59.4	59.9	-0.49	1.8	0.6	59.9	-0.22	1.9	0.5	L 16	XX
3X8QAH	57.5	59.2	62.3	60.2	59.8	-0.52	3.3	2.0	57.3	-1.62	3.0	3.1	8	LC
78HJRF	63.4	63.5	63.9	* 61.7	63.1	1.34	2.6	1.0	61.5	0.63	2.6	1.7	16	LD
7N98FR	57.7	No DATA	57.4	53.7 *	56.3	-2.51 *	3.4	2.2	56.7	-1.92	3.5	1.6	13	LD
8J8K2U	60.4	60.6	61.4	63.1	61.4	0.36	2.8	1.2	61.2	0.45	4.3	1.6	12	LC
8ZAHZJ	59.4	60.6	60.3	60.1	60.1	-0.36	1.9	0.5	60.1	-0.14	2.1	1.4	16	TH
9NDQXC	62.4	65.9 *	58.4	62.4	62.3	0.87	3.7	3.1	60.3	-0.02	3.2	2.0	16	LD
9Q36GV	53.4 X	55.1 *	53.8 XL	54.6 L	54.2	-3.67 X	1.7	0.8	56.0	-2.31 *	2.6	2.1	12	TH
AH7N7G	60.6	59.5	60.0	58.0	59.5	-0.67	2.4	1.1	59.1	-0.63	2.9	1.3	16	LZ
C6BZL2	65.1	59.6	58.9	58.1	60.4	-0.18	3.1	3.2	58.7	-0.87	4.1	3.1	14	MB
DAZWNX	60.5 H	65.2 *H	60.5	58.0 H	61.1	0.18	7.4	3.0	60.4	0.06	6.8	3.1	16	LC
DHVW3P	52.9 XH	No DATA	No DATA	56.4	54.6	-3.43 X	4.4	2.5	53.3	-3.72 X	3.6	5.8	H 14	XX
DR2WK4	59.0	58.5	57.7	57.5	58.2	-1.44	3.1	0.7	59.0	-0.71	3.1	1.8	16	LD
E8RY29	62.8	62.4	64.3 *	62.4	63.0	1.26	3.2	0.9	64.1	2.00 *	2.9	3.0	16	LZ
ERGDEW	60.7	60.1	59.8	L 59.0	59.9	-0.47	2.7	0.7	60.4	0.05	3.4	1.1	16	LD
FPM9WA	64.9	63.2	60.9	62.9	63.0	1.26	2.9	1.7	62.5	1.14	3.0	1.9	16	LD
GG9KY2	61.1	60.7	59.7	60.4	60.5	-0.14	2.7	0.6	60.4	0.03	2.9	0.6	16	LD
GJGUQY	48.1 X	47.1 X	47.6 X	45.2 X	47.0	-7.74 X	3.9	1.3	47.4	-6.85 X	3.5	1.2	8	TC
J266HQ	61.3	62.4	61.4	61.4	61.6	0.50	3.5	0.5	60.5	0.08	3.9	0.9	16	LD
J4AMPY	60.7	60.1	61.2	59.9	60.5	-0.14	3.3	0.6	60.4	0.06	3.4	0.6	16	LC
J9PX33	58.7	58.8	58.9	56.9	58.3	-1.36	2.8	1.0	57.4	-1.57	2.9	1.4	16	LC
JQ8W8Z	61.4 H	62.6 H	58.9 H	68.2 *H	62.8	1.14	8.2	3.9 H	86.7	14.00 X	11.2	40.5 H	16	XX
JXPCRX	59.1	62.3	59.1	61.4	60.5	-0.14	3.3	1.7	61.1	0.42	3.6	1.7	16	LC
JY6R6Y	56.4 *	57.9 L	56.3 *	55.6	56.5	-2.37 *	2.3	1.0	58.3	-1.10	2.8	1.6	16	EN
K93UYU	63.3	63.2	61.6	63.4	62.9	1.21	2.3	0.9	62.1	0.93	2.9	1.9	16	LC
KNXA82	67.3 *	59.5	61.1	59.1	61.8	0.58	3.7	3.8 H	60.0	-0.15	4.5	4.3 H	16	MB
LNU8XM	60.8	60.0	58.2	59.7	59.7	-0.58	3.2	1.1	59.5	-0.43	2.8	1.1	16	LD
LP69GZ	61.0	60.8	60.5	62.1	61.1	0.20	2.9	0.7	59.6	-0.39	2.7	1.5	12	EM
MT3WRF	61.4	60.9	61.0	60.9 L	61.1	0.18	2.0	0.3 L	60.9	0.30	2.1	0.5 L	16	LD
PUTRBU	60.0	56.5 *	59.6	57.8	58.5	-1.27	3.4	1.6	58.2	-1.13	2.8	1.2	16	LZ
PXMNXZ	63.4	62.9	60.8	63.3	62.6	1.05	2.9	1.2	61.5	0.62	3.4	1.8	15	LC
QQ4RNJ	72.4 X	71.3 X	72.4 XH	72.7 X	72.2	6.46 X	4.8	0.6	75.0	7.79 X	4.7	4.9 H	16	MB
R2H76Q	63.8 L	60.9 L	59.4 L	60.5 L	61.1	0.23	1.1	1.9	63.0	1.44	1.1	2.1	16	TD
RRBGBT	61.9	63.9	60.8	62.5	62.3	0.87	3.3	1.3	62.6	1.22	3.1	1.7	12	LD
UXE64K	56.8	57.5	58.8	55.7	57.2	-1.99 *	3.7	1.3	58.0	-1.26	3.2	1.4	12	XX



Containerboard Interlaboratory Testing Program
Analysis 240

Report #585 (F)
June 2018

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM92

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
UY772V	63.5	61.0	64.2 *	62.3	62.8	1.14	3.1	1.4	62.9	1.37	3.0	0.9	16	LD
UYKQRK	60.5	59.1	59.9	57.1	59.2	-0.89	4.2	1.5	58.8	-0.84	3.6	2.1	12	LC
VBX8YH	69.8 X	69.0 X	68.4 X	67.1 *	68.6	4.42 X	3.5	1.1	69.5	4.85 X	5.1	2.4	16	LC
VWWHZW	63.4	61.3	61.6	62.3	62.2	0.80	3.1	0.9	61.7	0.75	3.2	0.8	12	LD
VX8MAE	61.5	60.0	61.6	61.7	61.2	0.27	2.2	0.8	63.1	1.49	2.8	1.8	16	TU
WB7NMF	60.7	60.6	61.6	61.2	61.0	0.16	3.1	0.5	59.5	-0.42	3.1	3.0	13	LZ
WC28Q2	61.5	61.1	62.4	62.7	61.9	0.67	2.3	0.8	62.6	1.20	2.6	0.9	12	TM
Y62MLC	61.3	63.2	61.0	62.3	61.9	0.68	2.9	1.0	60.9	0.28	2.9	1.1	16	LD
Y788AC	51.1 X	50.9 X	52.2 X	51.7 *	51.4	-5.23 X	2.4	0.6	53.9	-3.40 X	2.6	2.1	16	LD
Z9NXP8	59.0 H	60.2	58.2	61.7 H	59.8	-0.54	5.8	1.5	60.1	-0.12	4.8	1.4	16	TG
ZGKNG9	60.5 L	60.3 L	60.4	60.4 L	60.4	-0.18	1.5	0.1 L	60.5	0.08	1.5	0.2 L	16	LD
ZQ8U4E	64.5	64.0	62.0	61.5	63.0	1.27	3.2	1.5	62.8	1.29	2.9	1.1	8	LD

Consensus (All Labs) Results														
Wk Mean	61.19	60.85	60.41	60.18	Month Mean	60.73			Grand Mean	60.33				
Avg SDr	3.14	3.41	3.29	3.70	Avg SD	3.42			Avg SD	3.25				
SD btwn Labs	2.30	2.22	1.75	3.20	SD btwn Labs	1.78			SD btwn Labs	1.88				
Labs Incd	41	41	41	45	SD btwn Wks	1.62			SD btwn Wks	1.83				
Labs Exclcd	6	4	5	2	Labs Incd	41			Labs Incd	41				
Labs not Rcvd	0	2	1	0										

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200 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	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TM	TMI/Hinde & Dauch	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
Analysis 250

Report #585 (F)
June 2018

Fluted Edge Crush Strength (FCF), 26 lb Corrugating Medium - CM92

TAPPI Official Test Method T843

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
78HJRF	71.0 L	72.6	71.9	70.9	71.6	-0.43	2.0	0.8	70.1	-2.07 *	1.9	1.5	16	LD
E8RY29	75.4	73.4	74.3	73.3	74.1	0.32	2.1	1.0	73.4	-0.30	2.4	2.5	16	LZ
J4AMPY	73.4	72.8	73.8 H	73.9	73.5	0.13	3.2	0.5	73.8	-0.05	2.5	0.5	16	LD
JXPCRX	76.9	77.6	77.0	77.7	77.3	1.31	2.7	0.4	77.9	2.16 *	2.5	0.8	16	LC
LNU8XM	72.2 L	72.0	71.8	74.0	72.5	-0.15	2.2	1.0	72.4	-0.80	2.5	1.3	16	XX
MT3WRF	73.2	73.5	73.6	73.8	73.5	0.14	2.4	0.2	73.7	-0.13	2.4	0.4	16	LD
PDH9EN	73.2	73.2 L	72.2 L	73.2	72.9	-0.03	1.4	0.5	73.1	-0.42	1.5	0.7	12	LZ
PUTRBU	74.2	76.5	73.7	70.5	73.7	0.20	2.7	2.5	74.5	0.31	2.5	1.8	16	LZ
PXMNXZ	75.5 H	74.9 H	75.0	74.4	75.0	0.59	5.3	0.4	74.4	0.27	4.2	1.2	15	XX
QQ4RNJ	65.8 *	67.6	61.1 X	68.1	65.7	-2.26 *	2.8	3.2 H	61.6	-6.62 X	2.5	5.6 H	16	MB
R2H76Q	75.1 L	71.0 L	71.6 L	76.0 L	73.4	0.11	0.9	2.5	73.1	-0.42	1.2	2.0	16	TD
UYKQRK	65.5 *H	66.2 *H	62.7 XH	65.7 *H	65.0	-2.46 *	7.4	1.6	65.4	-4.61 X	6.9	1.5	12	XX
Y62MLC	74.8	74.4	76.1	73.9	74.8	0.54	2.4	1.0	74.8	0.49	2.7	1.0	16	LD
Y788AC	77.1	77.0	77.2	77.0	77.1	1.24	2.2	0.1 L	76.7	1.50	2.4	1.2	16	LD
ZGKNG9	73.7 L	73.8 L	73.6	73.8 L	73.7	0.21	1.0	0.1 L	73.9	-0.01	1.2	0.4	16	LD
ZJAVYK	72.5	71.4	72.8	73.6	72.6	-0.15	2.9	0.9	72.0	-1.02	2.4	1.3	16	XX
ZQ8U4E	76.0	75.8	75.6	73.7	75.3	0.69	2.3	1.1	74.9	0.51	2.3	0.9	8	LD

Consensus (All Labs) Results									
Wk Mean	73.27	73.15	74.01	73.15	Month Mean	73.04	Grand Mean	73.91	
Avg SDr	3.32	3.20	2.31	2.87	Avg SD	3.08	Avg SD	2.39	
SD btwn Labs	3.30	3.02	1.85	2.97	SD btwn Labs	3.26	SD btwn Labs	1.86	
Labs Includ	17	17	15	17	SD btwn Wks	1.37	SD btwn Wks	1.30	
Labs Exclcd	0	0	2	0	Labs Includ	17	Labs Includ	15	
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
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 - CM92
 TAPPI Official Test Method T822

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
7N98FR	43.9	No DATA	44.6	45.3	44.6	0.14	2.4	0.7	45.4	0.36	3.1	1.2	13	LD
8ZAHZJ	40.9	40.6	39.4	41.2	40.5	-1.36	1.8	0.8	40.8	-1.38	1.8	1.1	16	TH
9NDQXC	48.3	51.9 *	50.1 *	50.1	50.1	2.14 *	3.2	1.5	49.5	1.92 *	3.1	2.2	16	LZ
AH7N7G	41.5	43.2	41.7	41.8	42.0	-0.81	2.7	0.8	41.8	-1.01	2.6	1.5	16	LD
DAZWNX	45.1	45.3	40.0	42.3	43.2	-0.40	2.9	2.5 H	44.8	0.14	3.1	2.2	16	LD
DHVW3P	44.3	No DATA	No DATA	40.8	42.5	-0.63	2.5	2.5	45.1	0.25	2.9	4.9 H	14	XX
GJGUQY	40.0 *H	42.5 H	39.0 H	38.0 H	39.9	-1.59	6.3	1.9	40.0	-1.70	5.8	1.4	8	TC
J266HQ	46.8	47.3	42.9	45.2	45.5	0.47	2.6	2.0	45.1	0.27	2.7	0.9	16	LD
JXPCRX	45.8	46.7	44.5	45.3	45.6	0.49	3.0	0.9	45.2	0.28	3.0	1.0	16	LC
K93UYU	45.8	45.9	45.2	48.0	46.2	0.72	2.1	1.2	47.0	0.96	2.8	1.7	16	LC
LNU8XM	42.5	42.1	42.3	39.6	41.6	-0.95	3.6	1.4	41.5	-1.10	3.3	1.3	16	LD
LP69GZ	45.7 L	45.2 L	44.6	45.4	45.2	0.36	1.6	0.5	45.4	0.35	1.6	0.5	12	LC
MT3WRF	43.8	44.3	43.9	43.8	43.9	-0.11	2.5	0.2	43.7	-0.26	2.5	0.3 L	16	LD
QQ4RNJ	30.4 X	33.7 X	35.8 *	36.3 *	34.1	-3.72 X	2.9	2.7 H	32.4	-4.56 X	2.8	3.0	16	MB
QQK7RM	45.8	45.5	45.5 L	46.0	45.7	0.54	1.6	0.2	46.3	0.71	1.5	0.5	16	WK
RRBGBT	46.1	48.3	46.3	46.8	46.9	0.96	2.3	1.0	46.1	0.65	2.8	1.2	12	LD
TNP42P	43.3	42.5	42.1	45.1	43.2	-0.36	2.2	1.4	44.1	-0.13	1.9	1.1	16	TH
VBX8YH	31.3 X	30.7 X	32.0 X	31.1 X	31.2	-4.75 X	1.9	0.5	31.5	-4.89 X	2.8	1.7	16	XX
VJPUL8	45.0	44.3	44.9	44.8	44.7	0.18	2.2	0.3	45.2	0.30	2.8	1.3	16	LZ
VVWHZW	46.6 L	46.2	46.7 L	48.6	47.0	1.01	1.3	1.1	46.3	0.69	1.7	1.0	12	LD
VX8MAE	41.3	41.4	41.0	41.1	41.2	-1.12	2.4	0.2 L	40.2	-1.62	2.2	1.0	16	TU
W8RBLLR	37.1 XL	39.2 *	39.9	38.7	38.7	-2.02 *	2.8	1.2	39.2	-1.97 *	2.3	1.7	16	LZ
Y62MLC	45.5 L	44.0	45.5	44.9	45.0	0.27	2.5	0.7	45.3	0.34	2.3	1.0	16	LD
Y788AC	49.2 *	48.1	49.0	48.3	48.7	1.61	2.7	0.5	48.1	1.39	2.6	1.5	16	LD
ZQ8U4E	45.7	46.5	45.4	45.8	45.9	0.59	2.3	0.5	46.6	0.84	2.2	1.1	7	LD
ZR4ZU8	43.7 H	44.7 H	44.0 H	42.8 H	43.8	-0.15	5.5	0.8	43.7	-0.27	5.4	1.3	8	TX

Consensus (All Labs) Results												
Wk Mean	44.63	44.80	43.50	43.84	Month Mean	44.24		Grand Mean	44.42			
Avg SDr	2.93	3.07	3.06	2.78	Avg SD	2.92		Avg SD	2.93			
SD btwn Labs	2.31	2.87	3.29	3.51	SD btwn Labs	2.74		SD btwn Labs	2.64			
Labs Incl	23	22	24	25	SD btwn Wks	1.22		SD btwn Wks	1.62			
Labs Excl	3	2	1	1	Labs Incl	24		Labs Incl	24			
Labs not Rcvd	0	2	1	0								



Containerboard Interlaboratory Testing Program
Analysis 255
Ring Crush (RCT), 26 lb Corrugating Medium - CM92
TAPPI Official Test Method T822

Report #585 (F)
June 2018

Key to Instrument Codes Reported by Participants

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
TU	TMI Universal Crush Tester (TMI K440)	TX	TMI Digital Crush Tester (model not specified)
WK	Zwick Z005 Crush Tester	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 261
STFI, 26 lb Corrugating Medium - CM92
 TAPPI Official Test Method T826

Report #585 (F)
June 2018

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
4WP2F4	14.4	14.9 L	14.6	14.6 L	14.6	0.41	0.8	0.2	14.6	0.11	0.7	0.2	16	TT
7N98FR	13.9	No DATA	13.8 H	14.0	13.9	-1.48	1.3	0.1	14.6	0.25	1.1	0.6	13	LZ
7YMGMH	14.7	14.2	14.5	14.7	14.5	0.13	0.9	0.2	14.7	0.49	0.9	0.3	16	LA
8J8K2U	15.6 *	15.3	15.2	15.1	15.3	1.98 *	1.2	0.2	15.0	1.54	1.0	0.3	12	LA
9Q36GV	14.7	14.4	14.9	14.4	14.6	0.32	1.1	0.3	14.8	0.67	1.2	1.4 H	12	LH
AH7N7G	14.1	14.9	15.2	14.8	14.8	0.67	0.9	0.5	14.7	0.56	1.0	0.4	16	LZ
C6BZL2	14.4	14.1	14.7	12.3 XL	13.9	-1.47	0.8	1.1 H	14.2	-0.99	0.9	0.8	14	LA
DHVW3P	14.8 H	No DATA	No DATA	14.5	14.6	0.31	1.5	0.2	14.2	-0.96	1.6	0.5	14	XX
DR2WK4	14.3	14.6	14.1	14.1	14.3	-0.54	1.1	0.2	14.0	-1.65	1.1	0.4	16	LU
GG9KY2	14.5	14.8	15.0	14.0	14.6	0.22	0.9	0.4	14.7	0.36	0.9	0.4	16	LB
GJGUQY	14.0	14.5	14.8	15.3	14.6	0.34	1.1	0.5	14.5	-0.22	1.1	0.5	8	TS
J4AMPY	14.9	14.4	14.0	14.7 L	14.5	0.07	0.8	0.4	14.6	0.32	0.9	0.4	16	LB
JQ8W8Z	14.8	14.7	14.4	15.2	14.8	0.68	1.0	0.4	14.7	0.41	1.0	0.3	16	LA
JXPCRX	14.9	14.5 L	14.4	14.5 L	14.6	0.27	0.8	0.2	14.6	0.21	1.0	0.3	16	LU
KNXA82	13.3 *	13.6 *	13.7	13.7	13.6	-2.24 *	1.1	0.2	14.1	-1.32	0.9	0.6	16	BK
LP69GZ	14.4	14.2	14.3	14.0	14.2	-0.64	1.1	0.2	14.0	-1.53	1.0	0.4	12	LB
MT3WRF	14.7	14.8	14.7	14.8	14.7	0.66	0.9	0.1	14.7	0.52	0.9	0.1	16	LB
UY772V	14.8	14.8	14.4	14.6	14.7	0.46	0.9	0.2	14.8	0.71	0.9	0.3	16	LH
VJPUL8	14.1	14.2	13.9	14.1	14.1	-1.05	1.0	0.1	14.5	-0.22	1.1	0.4	16	LA
VVWHZW	15.4 *	15.2	15.2	15.0	15.2	1.76	0.9	0.2	15.1	1.85	0.9	0.2	12	LH
WB7NMF	14.1	14.1	14.7	14.0	14.2	-0.70	1.0	0.3	14.4	-0.39	0.9	0.4	16	LB
WC28Q2	16.2 X	15.7 *	16.0 X	16.2 X	16.0	3.82 X	1.1	0.2	15.9	4.26 X	1.1	0.3	12	LA
Y62MLC	14.6	14.3	14.5	14.3	14.4	-0.19	0.9	0.2	14.3	-0.76	0.9	0.3	16	LZ
Y788AC	14.5	14.6	15.1	15.7 *L	15.0	1.17	1.0	0.6	14.9	1.29	1.0	0.4	16	LA
ZGKNG9	14.4 H	14.6 H	14.6 H	14.7 H	14.6	0.17	3.3	0.1	14.6	0.12	1.8	0.1	16	LA
ZQ8U4E	14.4 L	14.9	14.6	14.5	14.6	0.30	0.9	0.2	14.8	0.84	0.8	0.5	8	LB
ZR4ZU8	13.6	13.6 *	14.0	14.1	13.8	-1.62	1.1	0.3	13.8	-2.23 *	1.1	0.3	8	TX

Consensus (All Labs) Results														
Wk Mean	14.47	14.56	14.52	14.53	Month Mean	14.48			Grand Mean	14.54				
Avg SDr	1.16	1.24	1.04	1.26	Avg SD	1.18			Avg SD	1.05				
SD btwn Labs	0.49	0.49	0.45	0.48	SD btwn Labs	0.40			SD btwn Labs	0.32				
Labs Incl	26	25	25	25	SD btwn Wks	0.36			SD btwn Wks	0.48				
Labs Excl	1	0	1	2	Labs Incl	26			Labs Incl	26				
Labs not Rcvd	0	2	1	0										



Containerboard Interlaboratory Testing Program
Analysis 261
STFI, 26 lb Corrugating Medium - CM92
TAPPI Official Test Method T826

Report #585 (F)
June 2018

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LB	L&W Model 152	LH	L&W 282
LU	L&W 52 without moisture correction (was 53)	LZ	L&W (model not specified)
TS	TMI Monitor/STFI Compression Tester, 17-33	TT	TMI Short Span Compression, 17-34 (MB K455)
TX	TMI (model not specified)	XX	Instrument make/model not specified by lab