



Containerboard Interlaboratory Testing Program

Participant Summary Report #575 (J) - August 2017

[Introduction to the Containerboard Program](#)

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

Analysis	Sample	Analysis Name
<u>201</u>	<u>BX11</u>	<u>Box Compression Strength, Corrugated Boxes</u>
<u>202</u>	<u>EC10</u>	<u>Edgewise Compressive Strength, Wax (T811), Corrugated Board</u>
<u>203</u>	<u>EC10</u>	<u>Edgewise Compressive Strength by Clamp (T839), Corrugated Board</u>
<u>205</u>	<u>42D2</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>42D2</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>42D2</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>42D</u>	<u>Internal Bond Strength, Linerboard, 42 lb Linerboard</u>
<u>234</u>	<u>56A</u>	<u>Coefficient of Static Friction - Inclined Plane, 56 lb Linerboard</u>
<u>237</u>	<u>42D</u>	<u>Air Resistance - Gurley Method, Linerboard, 42 lb Linerboard</u>
<u>240</u>	<u>CM91</u>	<u>Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium</u>
<u>250</u>	<u>CM91</u>	<u>Fluted Crush of Medium, 26 lb Corrugating Medium</u>
<u>255</u>	<u>CM91</u>	<u>Ring Crush of Medium, 26 lb Corrugating Medium</u>
<u>261</u>	<u>CM91</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	CM91	October 2016-Current
	CM81	October 2015-September 2016
35 lb Linerboard	35E1	June 2017-Current
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 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 #575 (J)
August 2017

Top to Bottom Box Compression Strength, Corrugated Boxes - BX11

TAPPI Official Test Method T804

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
7XWQMK	665.0	-1.53	21.97	665.9	-1.88	15.00	4	LL
AGHB9U	727.4	-0.23	20.38	722.7	-0.61	8.66	4	LS
AX6RA6	717.2	-0.44	26.49	740.1	-0.22	27.59	4	LG
BC2GRN	705.0	-0.70	20.11	771.2	0.48	46.89	4	LG
BEN8TR	767.9	0.61	91.02 H	767.0	0.38	39.60	4	ET
BHTQ2L	659.3	-1.65	38.30	703.2	-1.04	30.94	4	ER
CYVPMU	676.3	-1.29	44.45	718.4	-0.71	33.76	4	LS
EQDVMH	733.4	-0.10	28.99	751.1	0.03	17.90	4	ES
FKJFBG	753.8	0.32	37.37	731.6	-0.41	19.58	4	ER
FX7QXL	703.6	-0.72	49.77	678.4	-1.60	21.57	4	TB
HGACBP	806.0	1.41	43.50	836.0	1.93 *	25.81	4	LH
HUF4FH	694.3	-0.92	19.57	776.2	0.59	98.24 H	4	TE
L9NFYD	782.6	0.92	12.35	746.1	-0.08	35.25	3	LS
LU4ZVE	898.3	3.33 X	108.54 H	844.8	2.12 *	122.52 H	3	LL
M7C3UG	740.4	0.04	27.14	745.2	-0.11	17.11	4	LM
MRC2GF	742.8	0.09	36.37	755.4	0.12	14.88	4	EX
NYUU97	952.4	4.45 X	32.28	948.1	4.43 X	6.08	2	LM
P4YYBP	803.2	1.35	46.32	780.1	0.68	32.58	2	LG
QBV6QC	727.6	-0.22	23.55	732.9	-0.38	10.90	4	ER
R4V6TV	697.2	-0.86	13.55	695.0	-1.23	19.59	4	LG
V43N34	795.3	1.18	19.52	781.6	0.71	12.65	3	EX
VDKA27	789.5	1.06	14.73	751.0	0.02	54.56	2	XX
WK6MMQ	726.6	-0.25	35.36	739.2	-0.24	9.32	4	LG
YNGC36	830.6	1.92 *	48.67	814.5	1.44	44.19	4	ER

Consensus (All Labs) Results

Month Mean	738.40	Grand Mean	749.88
Avg SD	36.95	Avg SD Months	42.69
SD btwn Labs	48.08	SD btwn Labs	44.70
Labs Incl	22	Labs Incl	23

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	707.89	51.24	30.52	6
Clip sealing	753.55	41.77	15.15	15



Containerboard Interlaboratory Testing Program
Analysis 201

Report #575 (J)
August 2017

Top to Bottom Box Compression Strength, Corrugated Boxes - BX11

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 - EC10
 TAPPI Official Test Method T811

Report #575 (J)
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WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
AGHB9U	39.7	1.04	2.17	38.2	0.69	1.59	4	EM
BHTQ2L	34.8	-0.22	2.71	35.3	-0.44	1.07	3	EN
CYVPMU	37.9	0.57	1.65	37.8	0.52	0.60	4	LC
EJMT9K	29.8	-1.49	2.61	29.6	-2.60 X	3.31 H	3	XX
FEVXVJ	33.2	-0.63	1.41	33.9	-0.97	1.20	4	WK
G3TXVK	33.9	-0.43	3.18	35.5	-0.34	2.16	3	LC
HGACBP	32.8	-0.74	0.90 L	33.2	-1.22	1.06	4	TC
L9NFYD	32.6	-0.79	2.20	34.0	-0.91	1.38	3	EM
R4V6TV	40.9	1.36	1.28	39.2	1.07	1.49	3	TH
WK6MMQ	40.8	1.32	1.33	40.6	1.60	0.28	4	LE

Consensus (All Labs) Results			
Month Mean	35.62	Grand Mean	36.41
Avg SD	2.07	Avg SD Months	1.31
SD btwn Labs	3.90	SD btwn Labs	2.62
Labs Incd	10	Labs Incd	9

Key to Instrument Codes Reported by Participants

EM Emerson 1200 Series	EN Emerson 2200
LC L&W Crush Tester 48	LE L&W Crush Tester 840
TC TMI Monitor/Compression Tester, Model 17-37	TH TMI Monitor/Compression Tester, Model 17-76
WK Zwick Z005 Crush Tester	XX Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC10
 TAPPI Official Test Method T839

Report #575 (J)
August 2017

WebCode	Monthly Results			Cumulative Results					
	Mean	CPV	SD	Mean	CPV	SD	Months	Months	Inst
2E2866	37.5	-1.19	1.81	37.7	-1.45	5.02	H	4	CT
3LJZVV	37.2	-1.34	2.21	38.6	-0.99	1.17		4	LD
7P6DLZ	39.4	-0.31	0.76	39.9	-0.29	0.90		4	LC
7PLEKV	42.2	1.02	1.39	43.4	1.57	1.35		4	EM
7XWQMK	38.8	-0.60	1.54	39.0	-0.80	0.51		4	LC
83844X	43.6	1.68	0.99	43.7	1.71	0.87		4	TG
A7F86K	40.2	0.05	2.48	40.2	-0.13	0.38		4	LD
AGHB9U	44.4	2.05 *	2.29	44.8	2.27 *	1.35		4	EM
AX6RA6	39.2	-0.38	1.10	41.3	0.41	1.83		4	TJ
BC2GRN	39.4	-0.31	2.17	40.2	-0.16	0.80		4	EM
BEN8TR	39.9	-0.05	0.98	41.5	0.55	1.21		4	TD
BHTQ2L	39.1	-0.45	2.69 H	37.8	-1.44	1.06		4	EX
CYVPMU	41.3	0.60	1.21	41.4	0.50	0.95		4	LC
DA7HQU	40.5	0.23	2.08	40.0	-0.28	1.53		4	TD
EQDVMH	37.3	-1.30	1.65	38.5	-1.06	1.11		4	LD
EWUGLN	45.6	2.60 *	1.52	43.5	1.59	2.27		3	WL
FEVXVJ	35.4	-2.17 *	0.73	36.3	-2.20 *	1.49		4	WK
FKJFBG	38.4	-0.78	2.45	38.2	-1.21	1.78		4	LD
FX7QXL	42.6	1.21	0.54 L	39.8	-0.37	6.20 H		4	LD
G3TXVK	40.9	0.41	1.39	40.9	0.21	1.76		3	LC
GF2FTF	39.8	-0.13	1.42	38.2	-1.19	2.15		4	LD
HGACBP	37.8	-1.07	0.82	38.9	-0.84	0.90		4	TX
HUF4FH	43.1	1.43	1.35	42.7	1.19	0.53		4	LD
HUUREN	41.1	0.47	1.07	41.8	0.69	0.73		4	XX
J2UGP2	38.4	-0.80	0.78	39.7	-0.42	2.36		4	LC
JC8TNG	36.7	-1.58	1.95	40.5	-0.02	3.94		4	TB
KDJPUL	37.0	-1.44	0.98	37.8	-1.40	1.63		3	EM
KPYKAL	40.7	0.31	1.54	40.1	-0.21	0.53		4	LD
L9NFYD	39.8	-0.14	1.64	40.2	-0.15	0.39		3	EM
LU4ZVE	38.5	-0.71	1.02	39.3	-0.64	0.69		3	BU
M7C3UG	41.3	0.58	1.12	42.4	1.02	1.17		4	TG
M9ZC74	39.3	-0.37	3.92 H	40.9	0.23	5.14 H		4	LC
MRC2GF	39.9	-0.09	1.07	39.0	-0.79	0.84		4	LD
NYUU97	41.5	0.69	1.57	41.9	0.73	0.51		2	EM
P4YYBP	39.2	-0.40	2.42	41.1	0.33	2.69		2	MK
R4V6TV	41.1	0.50	0.85	39.9	-0.30	1.12		3	TH
RDZEVE	40.2	0.06	1.12	42.7	1.17	2.30		3	TK
V43N34	43.0	1.39	0.63 L	42.2	0.93	0.78		4	TL
WK6MMQ	40.1	0.04	1.69	39.3	-0.63	1.21		4	LY



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC10
 TAPPI Official Test Method T839

Report #575 (J)
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WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
YKR8YZ	39.3	-0.36	1.53	40.8	0.15	1.51	4	LD
YNGC36	40.1	0.04	0.80	40.4	-0.07	0.44	4	EM
YQ29K4	41.3	0.60	1.19	42.7	1.15	3.17	4	TD

Consensus (All Labs) Results			
Month Mean	40.05	Grand Mean	40.48
Avg SD	1.63	Avg SD Months	2.11
SD btwn Labs	2.12	SD btwn Labs	1.89
Labs Incl	42	Labs Incl	41

Key to Instrument Codes Reported by Participants

BU Buchel Digital Crush Tester	CT Con-Ten
EM Emerson 1200 Series	EX Emerson (model not specified)
LC L&W Crush Tester 48	LD L&W Crush Tester 248
LY L&W 830	MK Mark-10 ESM303
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
TL Tech-Lab Systems Compression	TX TMI (model not specified)
WK Zwick Z005 Crush Tester	WL Zwick Z020
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 #575 (J)
August 2017

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	
2E2866	111.0	111.5	107.7	116.7	111.7	0.84	13.3	3.7	113.4	1.35	13.2	3.0	16	XX
2K6BWP	116.0	111.7	110.2	110.8	112.2	0.97	13.3	2.6	111.1	0.63	12.5	3.3	16	LC
2R9FMM	110.5	102.4	111.3	106.4	107.7	-0.35	12.6	4.1	107.7	-0.46	11.6	4.2	16	LC
38E2JH	111.9	111.9	119.6 *	114.9	114.6	1.67	10.7	3.6	109.9	0.24	10.3	6.3	16	LC
3UQWFR	102.3	109.8	104.0	110.0	106.5	-0.67	9.4	4.0	107.6	-0.49	10.1	2.7	16	TB
3VJT32	109.4	109.3	109.3	109.3	109.3	0.14	8.3	0.0 L	108.9	-0.07	8.8	0.4 L	16	LJ
4CNE6M	108.0	109.0	112.4	110.4	109.9	0.32	12.1	1.9	111.4	0.72	12.5	2.2	16	LA
4LEZBL	110.3	110.6	110.3	107.6	109.7	0.25	9.7	1.4	109.1	-0.01	9.5	1.7	16	LA
6CL92Y	112.5	111.1	108.8	106.9	109.8	0.29	10.6	2.5	110.3	0.37	10.8	2.1	16	LA
6HLQDP	102.5	106.2	106.3	108.3	105.8	-0.89	10.3	2.4	106.7	-0.76	10.6	2.5	9	LC
6YUMTH	113.6	114.2	117.6	108.7	113.5	1.36	10.1	3.7	112.9	1.20	9.1	2.8	16	LC
7PKBFK	109.8	104.5 L	108.0	106.7	107.3	-0.46	6.6	2.2	107.5	-0.52	6.1	1.7	12	LA
7RUK7W	104.6	112.9	114.2	111.2	110.7	0.55	8.4	4.3	110.4	0.41	9.4	3.6	16	LC
8QEHYN	104.3	105.3	103.2	107.2	105.0	-1.11	12.8	1.7	105.7	-1.09	12.8	2.4	14	LC
9TYUAD	103.1	106.3	106.0	104.4	105.0	-1.13	11.0	1.5	105.4	-1.20	9.9	3.6	16	LA
A7F86K	106.2	102.2	103.8	101.7	103.5	-1.56	8.2	2.0	103.1	-1.91	8.6	2.4	16	LA
AGHB9U	113.7	107.0	108.0	109.0	109.5	0.18	9.0	2.9	101.1	-2.54 *	8.7	5.9	16	LA
CYVPMU	106.3	102.2	107.2	103.9	104.9	-1.15	11.7	2.3	107.7	-0.46	10.7	3.6	16	AH
DK9UNA	109.6	102.9	103.0	105.8	105.4	-1.02	9.7	3.2	104.9	-1.33	10.4	3.5	16	LC
DT338F	120.7 *	117.7 *	111.9	114.5	116.2	2.14 *	10.9	3.8	117.0	2.48 *	12.0	2.7	16	LA
DWHFAN	107.9	109.1 L	110.3 L	107.0 L	108.6	-0.08	4.5	1.4	108.2	-0.30	5.0	1.0 L	16	AH
EQDVMH	108.0	106.6	104.9	108.2	106.9	-0.56	11.1	1.5	106.3	-0.91	11.6	2.7	16	LA
F4CG3D	110.7	113.2	103.8	112.7	110.1	0.37	11.3	4.3	108.3	-0.28	11.9	4.3	16	LC
FKJFBG	104.9	105.6	103.6	103.9	104.5	-1.26	11.4	0.9	106.0	-1.00	9.9	3.5	16	AH
FPBQKE	110.8	108.1	107.0	113.7	109.9	0.31	11.2	3.0	108.5	-0.19	11.6	2.7	16	TB
FRGB9E	114.0	116.0 H	111.0	112.6	113.4	1.32	12.7	2.1	113.7	1.44	11.9	3.0	16	LZ
G2MAHF	103.9	102.3	100.9 L	113.3	105.1	-1.09	10.2	5.6	106.5	-0.84	9.7	3.3	16	LC
GEMBVG	112.5	113.7 L	113.0 L	113.6 L	113.2	1.27	3.9	0.6	111.9	0.87	3.9	1.1	16	XX
GF2FTF	111.7	106.0	113.9	97.0 X	107.2	-0.49	7.9	7.5 H	110.9	0.56	9.0	5.0	16	LC
HG9KF3	113.8	109.7	110.3	108.2	110.5	0.49	8.4	2.4	110.8	0.54	12.8	2.2	16	LB
HGACBP	110.0	111.0	107.3	102.8	107.8	-0.32	11.1	3.7	110.8	0.52	11.0	5.3	12	AA
J6BYT4	124.6 X	128.8 X	128.6 X	125.6 X	126.9	5.25 X	13.0	2.1	109.2	0.01	11.3	11.0 H	16	AH
JPJ2R9	106.4	105.5	115.4	110.0	109.3	0.14	12.0	4.5	108.1	-0.32	10.5	5.3	16	LA
KA2EUW	111.9	112.1	109.3	113.6 H	111.7	0.84	12.9	1.8	112.0	0.90	13.4	7.3	16	XX
KPYKAL	117.0	112.0	116.0	113.6	114.7	1.69	9.9	2.3	111.4	0.72	10.5	3.5	16	AA



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

Report #575 (J)
August 2017

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	
M9ZC74	110.1	109.7	105.8	111.6	109.3	0.13	12.2	2.5	109.6	0.15	12.2	3.0	16	LA
MRC2GF	116.5	124.5 X	119.5 *	117.5 *	119.5	3.10 X	9.4	3.6	115.1	1.90	9.7	5.0	16	AH
NFG8KD	103.8	105.6	104.8	105.6 L	105.0	-1.13	5.1	0.9	105.1	-1.28	5.0	1.2	16	RE
NK9E67	110.3	113.0	112.0	115.8	112.8	1.14	11.0	2.3	113.3	1.31	11.6	3.0	16	AX
PANMU3	101.5 H	103.7	108.8	105.7	104.9	-1.14	13.0	3.1	107.0	-0.67	11.3	4.5	14	LC
PHHX2C	111.5	99.2 *	100.9	111.6	105.8	-0.88	5.8	6.7 H	109.5	0.12	8.0	11.7 H	16	AH
QBV6QC	102.8	100.8	102.4	105.3	102.9	-1.74	11.4	1.9	104.7	-1.40	10.4	2.2	16	LZ
QG4T4E	112.5	113.4	111.1	112.5	112.4	1.03	14.4	1.0	114.0	1.56	12.6	3.5	16	LA
UKAKL3	109.8	112.5	113.7	112.1	112.0	0.93	9.8	1.6	111.0	0.60	10.2	2.6	15	AH
V2DGH7	105.8	98.7 *	96.9 *	101.6	100.7	-2.35 *	12.5	3.9	104.9	-1.33	13.2	5.6	15	LC
VLGZVU	103.2	104.3	103.7	104.5	103.9	-1.43	7.3	0.6	104.9	-1.35	8.0	3.0	16	LC
WK6MMQ	113.3	113.1	109.2	NO DATA	111.8	0.87	10.3	2.3	111.7	0.81	15.9	3.0	15	LZ
WPD9C9	112.2 L	105.1	114.8	106.7	109.7	0.25	9.7	4.6	108.6	-0.16	10.0	4.3	16	LC
XGFXG4	110.2	108.6	109.8 L	112.0	110.2	0.38	6.0	1.4	109.0	-0.05	6.7	1.2	16	TP
XVJ4UN	108.4	111.2	115.1	103.5	109.6	0.21	10.2	4.9	108.8	-0.10	9.0	3.8	16	TB
YJMA2Q	108.1	109.1	108.2	109.1	108.6	-0.07	8.0	0.5	108.2	-0.29	9.9	1.3	16	LA
YJYCK6	115.2	109.4	115.3	107.9	111.9	0.90	10.8	3.9	113.1	1.24	11.5	4.7	16	LJ
YKR8YZ	112.1	111.1	109.6	110.8	110.9	0.59	10.5	1.0	112.7	1.14	10.4	2.1	16	LA
YYTLHH	103.2	109.2	104.8	102.8	105.0	-1.12	9.8	2.9	108.6	-0.16	11.1	3.5	16	XX
Z7QQX6	111.5	109.9	110.9	109.3	110.4	0.45	10.8	1.0	108.1	-0.32	9.9	4.3	16	LA

Consensus (All Labs) Results														
Wk Mean	109.48	108.44	109.01	109.11	Month Mean	108.84			Grand Mean	109.13				
Avg SDr	10.40	10.18	10.07	10.79	Avg SD	10.36			Avg SD	10.56				
SD btwn Labs	4.32	4.33	4.87	4.02	SD btwn Labs	3.44			SD btwn Labs	3.16				
Labs Incl	54	53	54	52	SD btwn Wks	3.10			SD btwn Wks	4.10				
Labs Excl	1	2	1	2	Labs Incl	53			Labs Incl	55				
Labs not Rcvd	0	0	0	1										



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

Report #575 (J)
August 2017

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

Report #575 (J)
August 2017

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
2E2866	93.5	97.4	94.3	94.9	95.0	1.03	9.7	1.7	94.8	0.87	10.0	2.7	8	XX
2K6BWP	96.3	94.5 H	89.2	99.5	94.9	0.98	10.1	4.3	94.9	0.89	8.7	4.0	8	LC
2R9FMM	96.7	92.1	88.5	87.5	91.2	-0.21	7.9	4.2	90.1	-0.43	7.6	3.1	8	LC
38E2JH	95.6	90.9	96.6	95.8	94.7	0.93	7.5	2.6	91.8	0.04	7.3	3.7	8	LA
3UQWFR	94.7	92.0	91.1	88.6	91.6	-0.08	9.7	2.5	93.9	0.63	9.7	3.4	8	TB
3VJT32	91.1	91.5	91.3	91.5	91.4	-0.16	6.6	0.2 L	90.0	-0.47	6.2	1.5	8	LJ
4CNE6M	94.8	92.4	96.8	87.6	92.9	0.34	9.5	4.0	93.9	0.62	8.4	3.1	8	LA
4LEZBL	91.6	90.8	90.1	91.0	90.9	-0.31	8.4	0.6	90.3	-0.39	8.1	1.3	8	LA
6CL92Y	91.1	90.3	91.9	94.4	91.9	0.03	8.2	1.8	91.1	-0.16	8.6	3.2	8	LJ
6HLQDP	94.7	91.1	96.1	88.7	92.6	0.25	10.2	3.4	91.8	0.04	9.2	3.2	8	LC
6YUMTH	100.1 *	94.5	99.0	97.2	97.7	1.89	8.4	2.4	96.2	1.27	8.3	2.3	8	LC
7PKBFK	91.0	90.8	92.3	90.3	91.1	-0.24	6.1	0.8	87.1	-1.27	6.5	4.4	8	LA
8QEHYN	86.4	84.6	89.9 H	89.1	87.5	-1.41	8.4	2.4	89.3	-0.64	9.1	3.5	8	LC
9TYUAD	89.4	86.6	93.1	91.4	90.1	-0.56	5.7	2.8	89.0	-0.72	5.4	2.6	8	LA
A7F86K	88.8 L	81.0 *	86.2	85.3	85.3	-2.11 *	5.5	3.3	85.6	-1.68	6.2	2.8	8	LA
AGHB9U	92.5	95.7	93.0	94.3	93.9	0.66	8.6	1.4	88.2	-0.95	8.3	6.3	8	LA
CYVPMU	89.8	86.7	87.4	89.0	88.2	-1.17	8.2	1.4	89.1	-0.70	8.0	2.5	8	AH
DK9UNA	87.6	93.5	93.3	92.5	91.7	-0.04	6.3	2.8	87.8	-1.06	7.4	4.8	8	LA
DT338F	96.3	97.4	98.3	100.3 *	98.1	2.01 *	6.7	1.7	98.2	1.83	7.5	2.0	8	LA
DWHFAN	90.0	89.1	87.8	89.4	89.1	-0.90	4.9	0.9	82.5	-2.54 *	4.3	7.1	8	AH
EQDVMH	91.8	91.2	87.5	85.3	89.0	-0.94	8.2	3.1	88.8	-0.80	8.5	2.4	8	LA
F4CG3D	90.9	94.7	88.8	91.1	91.4	-0.15	5.6	2.5	91.7	0.01	7.0	2.1	8	LC
FKJFBG	91.7	84.8	83.7 *	84.1 *	86.1	-1.87	6.7	3.8	88.0	-1.01	7.6	3.4	8	AH
FPBQKE	87.2	88.9	95.3	96.3	91.9	0.02	7.3	4.6	92.9	0.33	8.1	3.5	8	TB
FRGB9E	91.7	95.0	94.9	94.1	93.9	0.66	9.2	1.6	95.1	0.95	9.3	2.1	8	LZ
G2MAHF	92.2	85.6	93.7	94.8	91.6	-0.09	8.7	4.2	92.7	0.30	9.5	3.2	8	LC
GEMBVG	88.2	94.9 L	96.0 L	93.7 L	93.2	0.44	3.7	3.5	91.8	0.03	4.5	2.8	8	XX
GF2FTF	90.9	92.7	93.9	91.3	92.2	0.11	9.0	1.4	91.5	-0.03	8.4	2.1	8	LC
HG9KF3	87.3	90.7	86.1	88.4	88.1	-1.20	7.6	2.0	89.5	-0.60	7.2	2.1	8	LB
HGACBP	95.5	95.5	93.5	96.5	95.3	1.10	8.6	1.3	95.3	1.00	8.6	1.3	4	AA
J6BYT4	108.2XH	101.2 *	101.0 *	104.8 X	103.8	3.87 X	8.7	3.4	95.1	0.96	8.4	9.5 H	8	AH
JPJ2R9	95.6	90.0	91.7	92.3	92.4	0.18	8.9	2.4	92.1	0.13	8.1	1.9	8	LA
KA2EUW	88.6	90.5	88.7	93.6	90.4	-0.48	8.3	2.4	94.6	0.81	9.7	7.3	8	XX
KPYKAL	98.4	91.5	87.6	95.1	93.2	0.42	7.3	4.7	92.5	0.22	8.1	3.3	8	AA
M9ZC74	92.7	93.3	94.9	90.5	92.8	0.32	8.2	1.8	92.9	0.35	8.8	2.2	8	LA



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

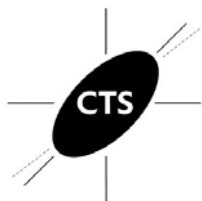
Report #575 (J)
August 2017

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	
MRC2GF	102.5 X	105.0 X	97.0	103.0 *	101.9	3.24 X	8.3	3.4	98.7	1.96 *	9.0	4.5	8	AH
NFG8KD	94.6 L	94.8	98.8	95.4 L	95.9	1.31	4.5	2.0	95.6	1.10	4.8	1.6	8	RE
NK9E67	94.2	98.6	94.9	89.0	94.2	0.76	8.9	3.9	94.2	0.71	8.9	2.8	8	AX
PANMU3	94.2	89.2	87.8	90.4	90.4	-0.47	8.8	2.7	90.0	-0.45	8.9	2.3	8	LC
PHHX2C	96.1	91.3	88.3	91.7	91.8	0.00	7.7	3.2	90.9	-0.20	7.9	2.5	8	AH
QBV6QC	83.5 *	88.4	89.3	86.6	87.0	-1.58	8.6	2.5	87.0	-1.28	8.6	2.2	8	LA
QG4T4E	90.9	94.6	94.9	89.7	92.5	0.23	9.0	2.6	93.2	0.42	10.3	4.0	8	LA
UKAKL3	94.7	94.0	100.9 *	96.4	96.5	1.51	9.2	3.1	96.6	1.36	7.9	2.4	8	AH
V2DGH7	88.2	90.2	87.5	87.8	88.4	-1.10	6.0	1.2	88.0	-1.02	7.8	1.4	7	LC
VLGZVU	89.0	93.4	92.0	86.4	90.2	-0.53	5.8	3.1	88.0	-1.00	6.7	3.2	8	LA
WK6MMQ	93.8	94.5	91.0	No DATA	93.1	0.41	8.9	1.8	95.1	0.95	10.2	2.6	7	LZ
WPD9C9	91.1	83.9 *	91.3	92.2	89.6	-0.72	9.2	3.8	90.6	-0.29	9.0	3.1	8	LC
XGFXG4	90.4	90.5	89.0	91.2	90.3	-0.51	6.1	0.9	83.6	-2.24 *	5.2	7.2	8	TP
XVJ4UN	96.1	99.2	103.1 *	99.0	99.3	2.41 *	9.0	2.9	99.3	2.13 *	7.6	2.5	8	TB
YJMA2Q	91.3	92.5	92.3	92.0 H	92.0	0.06	8.5	0.5 L	87.6	-1.13	7.7	5.3	8	LA
YJYCK6	89.0	85.2	93.0 H	98.4	91.4	-0.15	9.5	5.7	92.7	0.28	8.7	4.5	8	LJ
YKR8YZ	90.1	92.9	92.0	90.4	91.3	-0.16	7.9	1.3	93.9	0.63	8.3	3.2	8	LA
YYTLHH	97.7	95.9	94.7	95.2	95.9	1.30	7.6	1.3	94.7	0.85	7.7	1.7	8	XX
Z7QQX6	92.8	63.2 X	92.8	90.7	84.9	-2.26 *	7.9	14.5 H	89.4	-0.61	8.1	10.7 H	8	LA

Consensus (All Labs) Results									
Wk Mean	92.16	91.78	92.48	92.13	Month Mean	91.85	Grand Mean	91.65	
Avg SDr	7.87	7.99	7.91	8.04	Avg SD	7.96	Avg SD	8.07	
SD btwn Labs	3.40	4.08	4.15	4.11	SD btwn Labs	3.09	SD btwn Labs	3.61	
Labs Incl	52	52	54	52	SD btwn Wks	3.39	SD btwn Wks	3.92	
Labs Excl	2	2	0	1	Labs Incl	52	Labs Incl	54	
Labs not Rcvd	0	0	0	1					

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

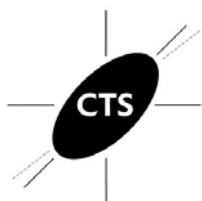
Ring Crush, 42 lb Linerboard - 42D2

TAPPI Official Test Method T822

Report #575 (J)

August 2017

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	
2R9FMM	90.6	91.5	92.1	89.5	90.9	0.62	4.0	1.2	89.9	0.34	3.8	1.4	16	LD
38E2JH	88.2	86.9	83.1	84.8	85.8	-0.68	3.4	2.3	83.9	-1.17	3.9	3.0	16	LC
3UQWFR	86.9	88.1	86.7	86.5	87.0	-0.36	3.3	0.7	88.1	-0.10	4.2	1.9	16	LC
3VJT32	88.5	88.3	88.5	87.7	88.2	-0.05	2.8	0.4 L	88.6	0.01	3.7	1.1	16	LD
4LEZBL	90.7	89.7	90.5	91.5	90.6	0.55	3.8	0.7	91.3	0.67	4.0	1.0 L	15	LD
6CL92Y	79.5 *	82.2	84.7	79.0 *	81.3	-1.80	3.1	2.6	81.0	-1.89	3.7	2.4	16	TU
6HLQDP	90.4	90.8	88.8	87.3	89.3	0.22	4.7	1.6	89.3	0.18	4.0	1.5	9	LC
7PKBFK	90.2	88.8 L	88.8	90.0 L	89.4	0.25	2.2	0.8	89.4	0.20	2.9	0.8 L	12	LZ
83844X	90.1	89.8	90.8	89.2	90.0	0.38	3.2	0.7	90.2	0.42	3.0	1.3	16	TH
8QEHYN	91.1	91.9	68.2 XH	62.4 XH	78.4	-2.55 *	7.3	15.3 H	89.2	0.16	6.1	11.8 H	13	LC
9TYUAD	96.4	92.5	93.9	89.9	93.2	1.20	4.4	2.7	95.2	1.66	4.2	8.6 H	16	LC
A7F86K	85.7	88.9	89.1	90.3	88.5	0.01	3.1	2.0	88.8	0.05	3.2	1.3	16	LD
AGHB9U	88.4	83.9	86.5	89.6	87.1	-0.35	4.6	2.5	89.6	0.25	3.8	4.8	16	EM
AX6RA6	90.1	88.9	81.8 *	83.9	86.2	-0.58	2.8	4.0	89.1	0.12	2.9	4.4	16	TJ
BC2GRN	88.8	86.2	84.3 H	85.4	86.2	-0.58	4.4	1.9	85.8	-0.69	4.1	1.7	16	EM
BHTQ2L	84.1	83.9	81.2 *	85.6	83.7	-1.20	3.9	1.8	82.8	-1.44	3.6	2.0	16	EN
BPPLYK	90.8	93.4	91.2	93.1	92.1	0.93	3.3	1.3	91.4	0.71	3.5	1.6	16	LD
CYVPMU	90.0	90.2	91.6	90.2	90.5	0.52	4.4	0.7	90.8	0.56	4.0	1.2	16	LC
DA7HQU	90.6 L	92.4 L	93.8	92.1 L	92.2	0.95	1.4	1.3	91.8	0.80	1.3	1.3	16	TD
DK9UNA	88.7	87.7	91.2	86.0	88.4	-0.01	3.8	2.2	84.5	-1.02	4.4	4.2	16	LZ
DT338F	91.3	93.2	89.7	90.8	91.3	0.71	3.8	1.5	91.9	0.82	4.2	2.3	16	LZ
E72D6L	92.4	87.0 H	92.6	93.8	91.4	0.76	5.7	3.0	90.0	0.36	4.9	2.7	12	XX
F4CG3D	87.9	88.0	88.0	88.5	88.1	-0.09	3.8	0.2 L	88.4	-0.05	3.8	1.2	16	LD
FKJFBG	85.4	88.8	85.8	86.9	86.7	-0.44	3.6	1.5	86.8	-0.43	4.1	1.2	16	LD
FPBQKE	80.2 *	81.5 *	86.1	63.4 XH	77.8	-2.70 *	5.8	9.9 H	78.4	-2.54 *	5.5	8.0 H	16	LZ
FR3NV7	88.5 H	85.5 H	85.3 H	84.6 H	86.0	-0.63	8.4	1.7	83.2	-1.33	6.5	4.5	16	MB
FRGB9E	83.5	80.0 *	82.1	85.8	82.8	-1.42	3.6	2.5	84.2	-1.08	3.9	2.9	16	LC
G2MAHF	87.7	89.4	94.6	91.4	90.8	0.59	3.3	3.0	91.7	0.78	4.5	2.2	16	LC
GEMBVG	90.5	88.1	85.8	94.8	89.8	0.34	4.6	3.8	89.7	0.29	4.6	3.3	16	LD
GF2FTF	87.9	88.2	88.3	87.7	88.0	-0.11	3.4	0.3 L	88.2	-0.10	3.9	1.5	16	LD
HG9KF3	87.2	87.3	88.2	87.6	87.6	-0.22	4.5	0.5 L	86.8	-0.44	3.7	1.2	16	LC
HUF4FH	93.6	92.2	92.8	91.9	92.6	1.06	2.5	0.8	91.9	0.84	3.3	0.9 L	16	LD
HV8BFL	92.3	92.6	93.9	93.5	93.1	1.17	3.5	0.7	92.6	1.00	3.6	1.3	16	LD
J6BYT4	89.9	82.8	82.3 H	84.1	84.8	-0.94	5.0	3.5	81.0	-1.87	5.9	7.3	16	LC
JPJ2R9	87.9	87.7	90.5	89.4	88.9	0.11	3.6	1.3	87.3	-0.31	3.9	2.0	16	LD



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

Report #575 (J)
August 2017

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
KPYKAL	86.3	89.9	77.5 X	77.5 *	82.8	-1.43	2.7	6.3	85.7	-0.72	3.6	3.6	16	LD
LRH4JG	80.1 *	88.7	89.9	86.9	86.4	-0.52	3.1	4.4	89.6	0.26	3.4	5.5	16	TH
M9ZC74	90.6	90.1	90.4	89.4	90.1	0.43	4.7	0.5 L	91.7	0.77	5.5	6.9	16	LC
NFG8KD	78.8 *	77.1 XL	73.2 X	72.9 X	75.5	-3.29 X	2.6	2.9	82.4	-1.52	3.1	4.8	16	LZ
NK9E67	83.7	87.3	73.5 X	79.8 *	81.1	-1.87	4.2	5.9	80.0	-2.14 *	4.5	5.5	16	LC
NYUU97	91.0	90.6	88.4	No DATA	90.0	0.39	4.1	1.4	89.3	0.18	3.5	1.3	7	EM
PHHX2C	96.6	96.2 *	90.4	98.0 *	95.3	1.74	4.8	3.4	92.8	1.06	4.6	3.5	16	LZ
QBV6QC	86.6	83.9	88.3	83.5	85.6	-0.73	3.4	2.3	85.7	-0.70	4.0	1.9	16	LD
QG4T4E	96.5	98.3 *	98.5 *	100.0 *	98.3	2.50 *	3.3	1.5	97.9	2.32 *	4.2	1.6	16	LD
RDZEVE	89.3	89.0	88.7	87.2	88.6	0.03	3.0	1.0	88.6	0.01	2.9	0.9 L	16	MB
V2DGH7	90.7	89.3	89.5	89.3 L	89.7	0.31	3.1	0.7	90.9	0.57	3.8	2.5	15	LD
VLGZVU	89.2	87.9	89.8	88.0	88.7	0.07	2.8	0.9	84.6	-0.98	3.2	3.0	16	LD
WCCCG2	91.5	94.2	93.2	94.6	93.4	1.25	4.4	1.4	93.0	1.10	4.5	1.2	16	EM
WK6MMQ	88.5	87.7	88.0	No DATA	88.1	-0.10	3.8	0.4 L	87.7	-0.22	3.5	1.4	15	LG
XGFXG4	89.1	90.6	88.6	91.1	89.8	0.35	3.6	1.2	89.2	0.17	3.8	1.1	16	TH
XVJ4UN	97.8 *H	94.5	97.0 *	93.8	95.8	1.85	4.6	1.9	97.5	2.21 *	4.7	2.2	16	LX
Y49A6Z	77.6 *H	93.4	91.6	79.6 *H	85.6	-0.73	6.6	8.1 H	89.3	0.17	4.9	4.6	16	MB
YJYCK6	86.0	87.8	90.0	91.2	88.7	0.07	4.6	2.3	88.0	-0.15	4.3	1.5	16	LD
YKR8YZ	91.5	90.4	91.2	90.5	90.9	0.62	3.5	0.5 L	91.0	0.61	3.8	0.8 L	16	LD
YNGC36	87.9	87.1 L	89.9	88.2	88.2	-0.05	2.6	1.2	88.4	-0.05	3.1	0.7 L	16	EM
Z7QQX6	95.3	70.0 XH	94.5	96.3	89.0	0.14	5.6	12.7 H	93.8	1.31	4.5	6.7	16	LC

Consensus (All Labs) Results														
Wk Mean	88.75	88.98	89.27	88.77	Month Mean	88.45	Grand Mean	88.57						
Avg SDr	3.81	3.76	4.13	4.14	Avg SD	4.14	Avg SD	4.09						
SD btwn Labs	4.27	3.58	3.76	4.57	SD btwn Labs	3.95	SD btwn Labs	4.02						
Labs Incl	56	54	52	51	SD btwn Wks	3.86	SD btwn Wks	3.68						
Labs Excl	0	2	4	3	Labs Incl	55	Labs Incl	56						
Labs not Rcvd	0	0	0	2										

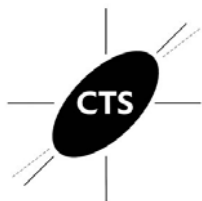


Containerboard Interlaboratory Testing Program
Analysis 215
Ring Crush, 42 lb Linerboard - 42D2
TAPPI Official Test Method T822

Report #575 (J)
August 2017

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
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program

Analysis 217

Report #575 (J)

August 2017

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	
2R9FMM	82.2	82.2	81.3	84.6	82.6	1.26	3.2	1.4	80.7	0.88	3.5	2.3	8	LD
38E2JH	74.6	73.0	72.9	73.3	73.5	-1.16	3.6	0.8	72.6	-1.62	3.8	1.4	8	LC
3UQWFR	80.7	78.6	77.4	77.2	78.5	0.17	4.1	1.6	78.3	0.16	5.4	2.0	8	LC
3VJT32	76.8	76.9	76.8	76.8	76.8	-0.27	4.4	0.1 L	77.5	-0.10	3.9	0.7 L	8	LD
4LEZBL	77.9	79.1	77.6	76.4	77.8	-0.02	3.7	1.1	78.6	0.25	3.8	1.2	8	LD
6CL92Y	63.1 X	68.2 *	71.7	71.4	68.6	-2.44 *	3.0	4.0	69.9	-2.48 *	2.9	3.0	8	TU
6HLQDP	80.9	80.1	78.2	79.1	79.6	0.47	4.2	1.2	78.8	0.30	4.1	1.3	8	LC
7PKBFK	77.5	78.4	76.9 L	76.7	77.4	-0.12	2.4	0.8	78.4	0.17	2.2	1.2	8	LZ
83844X	81.0	82.1	81.5	80.7	81.3	0.93	2.5	0.6	78.8	0.29	2.5	2.8	8	TH
8QEHYN	82.2	83.1	59.2 XH	60.0 XH	71.1	-1.78	5.8	13.3 H	76.0	-0.58	5.1	10.2 H	8	LC
9TYUAD	79.8	80.3	81.6	80.4 H	80.5	0.72	4.6	0.8	83.0	1.61	4.9	8.0 H	8	LC
A7F86K	75.1	75.6	76.2	77.2	76.0	-0.48	3.5	0.9	76.1	-0.53	3.4	0.8 L	8	LD
AGHB9U	78.4	76.1	76.8	77.1	77.1	-0.19	3.1	1.0	77.5	-0.11	3.4	1.6	8	EM
AX6RA6	73.8	75.4	70.6	69.9 *	72.4	-1.43	2.6	2.6	73.7	-1.29	2.3	2.8	8	TJ
BC2GRN	77.5	76.7	74.4	77.7	76.6	-0.34	3.2	1.5	77.2	-0.21	3.5	1.6	8	EM
BHTQ2L	76.1	75.4	75.1	73.6	75.1	-0.73	2.8	1.1	75.2	-0.81	2.5	0.9 L	8	EN
BPPLYK	81.7	78.6	79.5	80.9	80.2	0.63	3.1	1.4	79.5	0.52	3.1	1.2	8	LD
CYVPMU	81.5	79.9	82.5	84.1	82.0	1.10	3.3	1.8	81.6	1.17	3.5	1.6	8	LC
DA7HQU	77.9	81.9	77.7 L	77.0	78.6	0.21	1.7	2.2	77.9	0.03	2.0	1.7	8	TD
DK9UNA	75.1	73.9	75.5	76.2	75.2	-0.70	3.1	1.0	74.4	-1.07	3.3	2.2	8	LZ
DT338F	83.2	81.0 L	80.8	82.4	81.9	1.07	2.9	1.1	81.7	1.21	3.0	0.8 L	8	LZ
E72D6L	83.7	78.2	83.6	79.4	81.2	0.91	3.7	2.8	80.2	0.73	3.5	2.5	8	XX
F4CG3D	79.7	74.7	80.1	77.5	78.0	0.05	3.1	2.5	77.7	-0.06	3.3	2.3	8	LD
FKJFBG	72.1	74.1	75.5	74.7	74.1	-0.99	2.9	1.5	75.3	-0.79	2.9	1.7	8	LD
FPBQKE	69.0 *	70.6	68.8 *	55.9 XH	66.1	-3.11 X	4.4	6.8	65.5	-3.84 X	4.3	6.1	8	LZ
FR3NV7	74.6 H	72.7 H	73.8 H	75.5 H	74.2	-0.97	6.8	1.2	72.7	-1.60	5.5	2.0	8	MB
FRGB9E	70.4	69.7 *	69.5 *	74.4 L	71.0	-1.81	3.0	2.3	72.3	-1.73	3.2	2.1	8	LC
G2MAHF	80.6	79.2	84.4	82.2	81.6	1.00	3.9	2.2	80.1	0.72	3.8	2.3	8	LC
GEMBVG	77.0	77.3	75.8	81.2	77.8	0.00	4.0	2.3	76.3	-0.49	4.3	2.6	8	LD
GF2FTF	74.4	78.8	75.6	74.2	75.7	-0.55	4.0	2.1	75.2	-0.81	3.8	1.6	8	LD
HG9KF3	76.3	76.1	77.7	77.8	77.0	-0.22	4.1	0.9	74.6	-1.00	4.0	2.9	8	LC
HUF4FH	83.6	82.7	81.5	81.5	82.3	1.19	2.2	1.0	81.2	1.04	2.5	1.6	8	LD
HV8BFL	76.7	83.2 L	80.1	82.8	80.7	0.77	2.7	3.0	79.7	0.58	3.2	2.3	8	LD
J6BYT4	74.7	73.9	75.4	75.6	74.9	-0.77	3.4	0.8	72.8	-1.59	3.4	3.7	8	LC
JPJ2R9	77.8	76.6	77.1	80.0	77.8	0.01	4.1	1.5	76.5	-0.41	4.2	2.2	8	LD



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

Report #575 (J)
August 2017

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	
KPYKAL	76.6	76.5	87.5 *	87.6 *	82.1	1.12	3.1	6.4	78.8	0.31	2.8	5.4	8	LD
LRH4JG	72.8 L	73.5	75.9	72.2	73.6	-1.11	3.1	1.6	77.1	-0.23	3.1	4.5	8	TH
M9ZC74	76.8	77.9 H	73.7 H	77.9	76.6	-0.33	5.9	2.0	74.4	-1.07	5.8	4.9	8	LC
NFG8KD	85.0	85.7 *	83.6	83.1	84.4	1.73	2.5	1.2	79.5	0.51	2.4	5.4	8	LZ
NK9E67	72.4	72.9	63.8 X	64.8 X	68.5	-2.48 *	3.7	4.9	67.7	-3.16 X	3.7	5.6	8	LC
NYUU97	77.0	74.7	79.2	No DATA	77.0	-0.23	3.4	2.3	77.0	-0.27	3.4	2.3	3	EM
PHHX2C	85.1	77.9	78.5	78.6	80.0	0.59	3.8	3.4	80.6	0.88	3.6	2.5	8	LZ
QBV6QC	76.7	76.5	78.6	No DATA	77.3	-0.14	3.4	1.2	76.4	-0.44	3.4	1.3	7	LD
QG4T4E	86.9 *	86.2 *	86.3 *	86.5 *	86.5	2.29 *	3.3	0.3 L	85.3	2.33 *	3.5	1.7	8	LD
RDZEVE	81.4	80.2	80.5	79.3	80.4	0.68	3.4	0.9	75.6	-0.69	3.4	5.1	8	MB
V2DGH7	76.9	76.0	75.9	75.1	75.9	-0.50	2.4	0.7	77.4	-0.13	2.6	2.4	7	LD
VLGZVU	81.0	80.0	78.7 L	81.0	80.2	0.63	2.1	1.1	77.5	-0.10	2.4	3.0	8	LD
WCCCG2	83.1	82.1	81.7	81.5	82.1	1.13	2.8	0.7	81.9	1.26	3.2	1.1	8	EM
WK6MMQ	80.3	78.2	77.6	No DATA	78.7	0.23	2.8	1.4	79.0	0.36	2.5	1.5	7	LG
XGFXG4	79.7	77.1	76.8	79.4	78.3	0.12	2.6	1.5	77.9	0.02	2.9	1.4	8	TH
XVJ4UN	81.8 H	78.6	81.1	79.0 H	80.1	0.61	5.7	1.6	82.5	1.44	5.8	3.2	8	LX
Y49A6Z	67.7 *H	81.5	81.0	58.3 XH	72.1	-1.51	6.9	11.2 H	75.5	-0.73	5.7	8.8 H	8	MB
YJYCK6	73.8	76.8	79.9	76.2	76.6	-0.31	3.7	2.5	77.0	-0.28	3.2	1.7	8	LD
YKR8YZ	81.3	79.7	80.5	80.4	80.5	0.71	3.9	0.7	80.7	0.89	3.6	0.8 L	8	LD
YNGC36	80.6	79.3 L	79.6	79.5	79.7	0.51	2.1	0.6 L	83.9	1.88	2.6	4.4	8	EX
Z7QQX6	86.7 *	63.1 XH	86.5 *	86.5 *	80.7	0.76	5.1	11.7 H	83.3	1.69	4.1	8.2 H	8	LC

Consensus (All Labs) Results														
Wk Mean	78.32	77.74	78.28	78.63	Month Mean	77.82			Grand Mean	77.84				
Avg SDr	3.80	3.40	3.36	3.68	Avg SD	3.69			Avg SD	3.63				
SD btwn Labs	4.26	3.72	4.01	3.89	SD btwn Labs	3.77			SD btwn Labs	3.21				
Labs Incl	55	55	54	49	SD btwn Wks	3.43			SD btwn Wks	3.46				
Labs Excl	1	1	2	4	Labs Incl	55			Labs Incl	54				
Labs not Rcvd	0	0	0	3										



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

Report #575 (J)
August 2017

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	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	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program

Analysis 223

Report #575 (J)

August 2017

STFI, 42 lb Linerboard - 42D2

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	
2K6BWP	23.9	24.3	23.7	24.1	24.0	1.37	2.1	0.2	23.9	1.51	2.1	0.6	16	XX
2R9FMM	22.4	22.0 H	22.9	22.3	22.4	-0.05	1.9	0.4	22.8	0.44	1.7	0.6	16	LA
38E2JH	20.6	20.8	19.7 *L	20.9	20.5	-1.74	1.3	0.5	20.7	-1.60	1.4	0.7	16	LA
3UQWFR	24.7	24.1	24.5	23.9	24.3	1.62	1.9	0.4	23.6	1.30	1.9	0.7	16	LW
4CNE6M	22.8	24.0	22.7	21.5	22.7	0.24	1.9	1.0	23.4	1.03	2.0	0.8	16	LU
4LEZBL	22.6 H	23.2	23.2	22.5	22.9	0.38	2.1	0.4	22.7	0.38	2.0	0.4 L	16	LY
6HLQDP	29.8 XL	24.2 L	29.3 XL	27.8 XL	27.8	4.72 X	0.0	2.5 H	25.6	3.27 X	0.0	2.8	8	LA
6YUMTH	24.5	24.1	24.1	24.9	24.4	1.73	1.7	0.4	24.5	2.18 *	2.0	1.0	16	LA
7RUK7W	23.6 L	24.7	23.3	24.9	24.1	1.49	1.6	0.8	23.2	0.84	1.8	1.4	16	LA
8JD4EM	22.4	23.5 H	24.0 H	22.4 H	23.1	0.57	2.5	0.8	22.9	0.54	2.0	0.9	16	LH
8QEHYN	20.8 L	22.2 L	20.4 L	21.1 L	21.1	-1.19	0.0	0.8	21.3	-1.06	0.3	0.6	14	LA
9KGVHD	20.3 L	19.9 *L	20.7 L	19.8 *L	20.2	-2.05 *	0.0	0.4	19.9	-2.41 *	1.2	3.2	16	LW
9TYUAD	19.4 *L	20.9 L	21.4 L	19.8 *L	20.4	-1.85	0.0	0.9	20.7	-1.60	0.9	0.9	16	LW
A7F86K	22.3	22.2	21.9	21.6	22.0	-0.40	1.7	0.3	22.0	-0.30	1.6	0.3 L	16	BK
AGHB9U	22.4 H	22.1	22.8 H	22.9	22.6	0.08	2.7	0.4	22.5	0.15	2.3	0.8	16	LZ
BHTQ2L	21.6	21.3	20.5	20.8	21.0	-1.26	1.9	0.5	20.7	-1.58	1.8	0.5 L	16	LY
BPPLYK	22.5	22.1	22.0	22.7	22.3	-0.13	2.0	0.3	22.2	-0.16	1.9	0.4 L	16	LY
CYVPMU	22.6	21.9	22.4	21.8	22.2	-0.24	1.8	0.4	22.4	0.06	1.8	0.4 L	16	LU
DK9UNA	21.4	20.2	20.5	21.3	20.9	-1.42	1.8	0.6	20.7	-1.66	1.6	0.6	16	LA
DT338F	21.3	21.5	20.6	21.2	21.1	-1.19	2.3	0.4	21.3	-1.06	1.9	0.5 L	16	LW
DWHFAN	23.0 L	22.4 L	22.3 L	22.5	22.5	0.08	1.0	0.3	22.6	0.22	1.0	0.2 L	16	TT
E72D6L	22.0	24.0 L	23.2 L	23.9 L	23.3	0.74	0.9	0.9	22.5	0.18	1.3	1.0	12	XX
EWUGLN	24.0	25.3 *H	25.6 *	24.3	24.8	2.07 *	2.0	0.8	31.8	9.37 X	2.0	11.8 H	12	LH
FKJFBG	22.1	21.7	21.6	22.7	22.0	-0.39	2.0	0.5	21.8	-0.51	2.0	0.5	16	LU
FPBQKE	21.6	21.1	22.4	21.7	21.7	-0.68	2.0	0.5	21.4	-0.98	1.9	0.5 L	16	LZ
FR3NV7	21.3 L	20.5 L	24.6 L	23.7 L	22.5	0.07	0.4	1.9 H	22.9	0.54	0.5	1.3	16	BK
FRGB9E	21.5	21.8	22.8	22.7	22.2	-0.23	2.0	0.7	22.2	-0.17	2.2	0.6	16	LW
G2MAHF	22.8	23.4	21.9	22.3	22.6	0.10	1.9	0.6	22.3	-0.03	1.9	0.8	16	LA
GF2FTF	22.1	21.7	22.7	22.2	22.2	-0.27	2.0	0.4	22.4	0.07	2.1	0.6	16	LA
HG9KF3	22.7	22.6	23.0	23.1	22.8	0.32	1.6	0.2	23.0	0.63	1.6	0.4 L	16	LU
HUF4FH	20.6	21.3	21.9	20.0	21.0	-1.33	1.3	0.8	21.2	-1.15	1.6	0.6	16	LY
HV8BFL	23.5	23.0	23.1	23.0	23.2	0.62	1.5	0.2	23.2	0.89	1.3	0.4 L	16	LH
J6BYT4	21.5 L	21.6 L	21.5 L	21.1 L	21.4	-0.90	0.7	0.2	22.6	0.26	1.0	1.0	16	LY
JPJ2R9	22.9	22.9	20.5 L	22.2	22.1	-0.30	1.5	1.1	22.2	-0.11	1.3	0.8	16	LA
KA2EUW	21.6	21.3	21.8	22.0	21.6	-0.72	2.1	0.3	23.8	1.47	2.3	12.6 H	16	XX



Containerboard Interlaboratory Testing Program

Analysis 223

Report #575 (J)

August 2017

STFI, 42 lb Linerboard - 42D2

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	
KPYKAL	20.7	19.9 *	19.9 *	20.1	20.2	-2.04 *	1.9	0.4	20.4	-1.91	1.8	0.4 L	16	LW
LYZMP3	22.1	22.1	23.5	20.5	22.1	-0.34	2.0	1.2	21.4	-0.89	1.8	0.9	15	LW
M9ZC74	23.2	23.2	23.8	23.9	23.5	0.94	2.0	0.4	23.7	1.36	2.1	0.8	16	LU
NK9E67	24.1	23.5	23.2	25.4 *	24.1	1.42	2.2	1.0	22.7	0.35	1.8	2.0	16	XX
PANMU3	22.8	22.1	23.3	22.6 H	22.7	0.22	2.0	0.5	22.9	0.57	2.0	0.7	14	LA
QBV6QC	22.7	22.1	23.6	21.9	22.6	0.11	2.0	0.8	22.2	-0.15	1.8	0.6	16	LY
UKAKL3	25.4 *	25.0 *	24.5	25.0 H	25.0	2.24 *	2.3	0.4	24.1	1.77	2.4	1.1	14	LU
V2DGH7	22.0	22.0	22.2	22.0	22.0	-0.38	2.1	0.1 L	22.5	0.18	1.9	0.5	15	LZ
VLGZVU	22.8	23.7 H	22.7	22.8	23.0	0.48	2.0	0.5	22.2	-0.14	1.8	0.7	16	LA
WK6MMQ	21.9	22.2	21.7	No DATA	21.9	-0.46	2.1	0.2	21.8	-0.50	1.9	0.4 L	15	LU
WPD9C9	24.2	21.9	22.3	23.5	23.0	0.46	2.0	1.0	21.5	-0.83	1.8	1.2	16	LA
XGFXG4	22.4 L	22.5 L	22.5 L	22.5 L	22.5	0.03	0.9	0.1 L	22.3	-0.01	0.9	0.3 L	16	TT
Y49A6Z	23.4	22.6	22.3	22.7	22.7	0.24	1.9	0.5	25.3	2.97 X	1.0	12.8 H	16	LA
YJMA2Q	22.8	22.7	22.9 H	22.8	22.8	0.30	2.2	0.1 L	22.8	0.48	2.2	0.1 L	16	LW
YJYCK6	23.5 L	23.4 L	23.1 L	23.1 L	23.2	0.70	0.0	0.2	22.9	0.59	1.6	0.7	15	LU
YKR8YZ	23.2	23.3	22.6	22.9	23.0	0.47	1.8	0.3	23.2	0.90	1.6	0.4 L	16	LA
YYTLHH	21.5	22.4	23.2	22.7	22.4	-0.01	1.6	0.7	21.7	-0.60	1.9	1.3	16	XX
ZKPRCR	23.8	22.0	23.2	23.1	23.0	0.48	2.1	0.7	22.9	0.55	1.2	0.9	12	LU

Consensus (All Labs) Results									
Wk Mean	22.45	22.46	22.50	22.45	Month Mean	22.46	Grand Mean	22.34	
Avg SDr	1.77	1.80	1.80	1.79	Avg SD	1.79	Avg SD	1.75	
SD btwn Labs	1.19	1.26	1.25	1.34	SD btwn Labs	1.12	SD btwn Labs	1.01	
Labs Incl	52	53	52	51	SD btwn Wks	0.64	SD btwn Wks	1.99	
Labs Excl	1	0	1	1	Labs Incl	52	Labs Incl	50	
Labs not Rcvd	0	0	0	1					

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	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

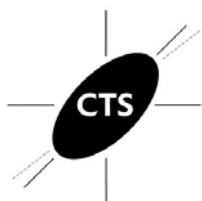
STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

Report #575 (J)

August 2017

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	
2K6BWP	23.3	22.7	23.3	23.0	23.1	1.19	1.7	0.3	23.3	1.75	1.8	0.4	8	XX
2R9FMM	22.3 L	21.8	23.1	22.2	22.4	0.51	1.7	0.5	22.3	0.65	1.7	0.5	8	LA
38E2JH	19.6	20.2	19.7 *	19.8	19.8	-1.95 *	1.6	0.3	20.2	-1.57	1.6	0.5	8	LA
3UQWFR	22.5	22.3	21.5	22.7	22.2	0.37	1.8	0.5	22.2	0.54	1.8	0.4	8	LW
4CNE6M	23.1 H	23.9	22.1	22.6	22.9	1.08	1.8	0.8	23.2	1.61	1.7	0.7	8	LU
4LEZBL	22.5	22.9 H	21.5	21.9	22.2	0.35	1.9	0.6	22.1	0.48	1.8	0.7	8	LU
6HLQDP	27.1 XL	26.8 XL	26.8 XL	26.5 XL	26.8	4.83 X	0.0	0.3	24.6	3.10 X	0.0	2.5 H	8	LA
6YUMTH	24.4 *	23.2	23.9 *	24.7 *	24.1	2.16 *	1.7	0.6	23.6	2.06 *	1.7	1.1	8	LA
7RUK7W	21.4	21.9 L	22.5	23.1	22.2	0.38	1.4	0.8	22.4	0.74	1.9	0.7	8	LA
8JD4EM	22.0	21.7	22.5	21.9	22.0	0.19	1.8	0.3	22.3	0.68	1.7	0.6	8	XX
8QEHYN	20.7 L	21.0 L	20.6 L	22.5 L	21.2	-0.62	0.0	0.9	20.9	-0.81	0.2	0.8	8	LA
9KGVHD	21.6 L	20.4 L	20.2 L	20.8 L	20.7	-1.06	0.0	0.6	21.0	-0.74	1.3	1.5	8	LW
9TYUAD	20.6 L	19.6 *L	21.3 L	19.9 L	20.4	-1.44	0.0	0.8	20.2	-1.50	1.1	0.5	8	LW
A7F86K	20.3 L	21.6	21.6	21.6	21.3	-0.55	1.2	0.7	21.0	-0.69	1.1	0.6	8	BK
AGHB9U	23.4 H	22.6	21.6	21.7	22.3	0.48	1.6	0.8	22.4	0.74	1.4	0.8	8	LZ
BHTQ2L	21.0	20.9	20.8	20.3	20.7	-1.06	1.6	0.3	20.7	-1.01	1.5	0.3	8	LY
BPPLYK	21.9	21.8	21.1	22.5 H	21.8	-0.02	1.8	0.6	21.7	0.09	1.6	0.6	8	LY
CYVPMU	21.3	22.0	22.2	22.6	22.0	0.15	1.6	0.5	21.8	0.11	1.5	0.6	8	LU
DK9UNA	20.3	20.1	20.3	21.2 L	20.5	-1.33	1.2	0.5	20.2	-1.51	1.3	0.6	8	LA
DT338F	21.4	20.4	20.6	20.2	20.6	-1.17	1.5	0.5	20.6	-1.08	1.6	0.4	8	LW
DWHFAN	21.7 L	21.9 L	21.5	22.3 L	21.8	0.00	0.8	0.4	21.7	0.01	0.9	0.3	8	TT
E72D6L	23.0	22.9	21.1	21.2	22.0	0.20	1.5	1.0	21.7	0.09	1.6	0.8	8	XX
EWUGLN	24.5 *	23.7	23.9 *H	24.1	24.0	2.14 *	1.9	0.3	29.7	8.45 X	2.1	6.1 H	8	LH
FKJFBG	21.5	21.7 H	20.5	21.3	21.2	-0.57	1.8	0.5	21.2	-0.53	1.6	0.5	8	LU
FPBQKE	20.6	21.1	21.1 H	20.1	20.7	-1.09	2.0	0.5	20.7	-0.98	1.9	0.4	8	LZ
FR3NV7	18.2 XL	18.3 XL	23.7 L	23.7 L	21.0	-0.85	0.4	3.1 H	21.6	-0.03	0.4	2.2 H	8	BK
FRGB9E	20.8	20.5	21.7	21.5	21.1	-0.67	1.6	0.6	20.8	-0.94	1.9	0.6	8	LW
G2MAHF	23.1	23.2 H	20.2	21.8	22.1	0.22	1.8	1.4	21.8	0.18	2.0	1.2	8	LA
GF2FTF	22.5 L	22.1 L	22.6	22.7 L	22.5	0.62	1.0	0.3	22.0	0.37	1.3	0.7	8	LA
HG9KF3	20.9	21.0	21.4	21.5	21.2	-0.64	1.2	0.3	21.4	-0.28	1.3	0.4	8	LU
HUF4FH	20.3	20.3	21.4	21.0	20.8	-1.04	1.4	0.5	20.8	-0.85	1.4	0.4	8	LY
HV8BFL	22.8	22.5	22.3	22.6	22.5	0.69	1.3	0.2	22.6	1.02	1.3	0.2 L	8	LH
J6BYT4	20.4 L	21.7 L	20.2 L	21.7 L	21.0	-0.79	0.7	0.8	21.4	-0.31	0.7	0.7	8	LY
JPJ2R9	22.1	22.3 L	22.0	21.5	22.0	0.14	1.1	0.3	21.9	0.28	1.1	0.7	8	LA
KA2EUW	19.8	19.8	20.6	20.8	20.3	-1.52	1.7	0.5	19.9	-1.88	1.6	0.6	8	XX



Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

Report #575 (J)

August 2017

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	
KPYKAL	20.2	19.8	20.2	19.9	20.0	-1.76	1.6	0.2	19.9	-1.82	1.6	0.3	8	LW
LYZMP3	22.0	22.0	21.7 H	21.3	21.7	-0.10	1.7	0.3	21.3	-0.40	1.6	0.7	8	LW
M9ZC74	22.9	23.2	23.2	23.5	23.2	1.34	1.9	0.2	23.2	1.64	1.8	0.5	8	LU
NK9E67	23.2	23.8	22.8	24.0	23.4	1.56	1.5	0.6	22.5	0.84	1.6	1.3	8	XX
PANMU3	22.1	22.6	22.4	21.8	22.2	0.38	1.8	0.3	21.6	-0.03	1.8	1.3	8	LA
QBV6QC	21.3	22.0 L	21.6	22.0 L	21.7	-0.09	1.3	0.3	21.5	-0.14	1.4	0.4	8	LY
UKAKL3	24.0	23.3	23.6	23.7	23.7	1.77	2.0	0.3	23.7	2.16 *	2.5	1.2	8	LU
V2DGH7	21.3 L	20.9	21.2	21.2	21.2	-0.65	1.3	0.2	21.4	-0.31	1.3	0.3	7	LZ
VLGZVU	22.9	22.3 H	22.0	21.9	22.2	0.40	1.9	0.4	21.9	0.27	1.6	0.5	8	LW
WK6MMQ	21.7	21.3	21.1	No DATA	21.4	-0.45	1.8	0.3	21.4	-0.29	1.6	0.3	7	LW
WPD9C9	23.2	21.2	22.0	22.1	22.1	0.28	1.7	0.8	21.1	-0.62	1.7	1.3	8	LA
XGFXG4	21.8 L	21.6 L	21.8 L	22.0 L	21.8	-0.05	0.8	0.1	21.5	-0.15	0.9	0.3	8	TT
Y49A6Z	21.6	20.4	21.9	21.6	21.4	-0.45	1.7	0.7	21.0	-0.69	1.2	0.7	8	LA
YJMA2Q	22.0 H	21.9 H	22.3	22.0	22.0	0.20	2.0	0.2	22.1	0.47	1.8	0.2 L	8	LW
YJYCK6	23.8 L	21.6 L	23.3 L	26.6 XL	23.8	1.91	0.0	2.1 H	22.9	1.28	1.3	1.7 H	8	LU
YKR8YZ	21.5	21.8	21.9	21.1	21.6	-0.24	1.5	0.4	21.3	-0.36	1.3	0.4	8	LA
YYTLHH	21.1	22.3	21.1	22.1 H	21.7	-0.17	2.3	0.6	21.1	-0.58	2.1	0.9	8	XX
ZKPRCR	24.1	23.4	23.2	23.5	23.5	1.65	1.4	0.4	23.5	1.97 *	1.4	0.4	4	LU

Consensus (All Labs) Results													
Wk Mean	21.92	21.78	21.76	21.93	Month Mean	21.83			Grand Mean	21.66			
Avg SDr	1.54	1.50	1.54	1.60	Avg SD	1.54			Avg SD	1.54			
SD btwn Labs	1.22	1.10	1.06	1.14	SD btwn Labs	1.03			SD btwn Labs	0.95			
Labs Incl	51	51	52	50	SD btwn Wks	0.75			SD btwn Wks	0.79			
Labs Excl	2	2	1	2	Labs Incl	52			Labs Incl	51			
Labs not Rcvd	0	0	0	1									

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	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 #575 (J)
August 2017

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
4CNE6M	178.7	0.24	28.53	187.0	0.51	7.47	4	EV
6HLQDP	165.7	-0.38	22.47	170.8	-0.17	7.22	2	LA
9TYUAD	191.8	0.86	17.50	187.5	0.53	3.41	4	EV
A976HH	151.1	-1.07	16.63	157.7	-0.71	4.52	4	EV
BHTQ2L	183.0	0.44	16.17	176.6	0.08	4.39	4	EV
DK9UNA	124.7	-2.32 *	10.37	125.3	-2.07 *	0.54 L	4	LA
DT338F	194.5	0.99	11.58	168.7	-0.25	21.66	4	EV
E72D6L	183.2	0.46	12.20	195.4	0.86	12.84	3	EV
FKJFBG	192.1	0.88	19.37	182.0	0.31	7.77	4	EV
FR3NV7	194.2	0.98	35.26 H	205.4	1.28	10.21	4	EV
FRGB9E	177.1	0.17	13.19	177.6	0.12	0.69 L	4	XX
G2MAHF	185.1	0.55	16.90	193.7	0.79	21.63	4	LA
J6BYT4	139.4	-1.63	17.12	127.5	-1.97 *	14.12	4	EV
M9ZC74	145.9	-1.32	22.78	146.8	-1.17	4.54	4	EV
PANMU3	197.7	1.14	34.49 H	194.2	0.82	23.99	3	LA
QBV6QC	175.4	0.08	16.88	215.4	1.70	28.81 H	4	EV
QG4T4E	153.9	-0.94	19.41	155.6	-0.80	4.11	4	EV
V2DGH7	170.6	-0.14	14.96	186.9	0.51	23.06	4	LA
VLGZVU	201.0	1.30	22.76	202.0	1.14	5.42	4	LA
WPD9C9	191.4	0.84	24.57	173.3	-0.06	16.01	4	EV
Y49A6Z	152.0	-1.03	30.72	147.0	-1.16	6.95	4	LA
YKR8YZ	171.0	-0.12	11.08	167.7	-0.29	4.48	4	XX

Consensus (All Labs) Results			
Month Mean	173.61	Grand Mean	174.73
Avg SD	21.00	Avg SD Months	13.41
SD btwn Labs	21.05	SD btwn Labs	23.92
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 #575 (J)
August 2017

WebCode	Monthly Results			Cumulative Results					
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst	
2R9FMM	387.7	1.63	6.31	421.8	7.85 X	29.57 H	3	XX	
2TYJFU	348.8	-1.15	6.77	360.7	-0.60	10.61	3	LA	
7RUK7W	367.8	0.21	7.54	368.8	0.52	3.55	3	XX	
CYVPMU	368.0	0.22	7.76	369.8	0.66	3.06	3	XX	
GF2FTF	355.4	-0.68	7.42	359.8	-0.72	4.47	3	LA	
H9A3WJ	377.8	0.92	9.51	375.9	1.51	4.04	3	PP	
JGPT7H	410.3	3.24 X	6.06	395.2	4.18 X	18.06 H	3	XX	
JPJ2R9	366.6	0.12	6.33	365.5	0.08	1.51	3	LA	
PHHX2C	347.0	-1.28	7.62	354.5	-1.45	7.13	3	TS	

Consensus (All Labs) Results				
Month Mean		364.89	Grand Mean	364.98
Avg SD		7.47	Avg SD Months	5.66
SD btwn Labs		14.02	SD btwn Labs	7.24
Labs Incd		8	Labs Incd	7

Key to Instrument Codes Reported by Participants

- | | |
|--|---|
| LA L & W Roughness Sheffield - Autoline
TS TMI Monitor/Smoothness | PP Technidyne Profile/Plus
XX Instrument make/model not specified by lab |
|--|---|



Containerboard Interlaboratory Testing Program
Analysis 231

Report #575 (J)
August 2017

Internal Bond, 42 Ib Linerboard - 42D

TAPPI Official Test Method T569

WebCode	Monthly Results				Cumulative Results				
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2R9FMM	65.5	-2.49 X	1.96		59.0	-3.38 X	7.03	4	LZ
38E2JH	97.0	-0.43	4.06		98.0	-0.53	3.49	4	TM
4CNE6M	62.4	-2.69 X	7.70		62.9	-3.10 X	4.41	4	TM
6WN4NU	100.9	-0.18	3.81		97.9	-0.53	3.21	4	TM
7RUK7W	96.4	-0.47	1.10	L	106.2	0.07	6.82	4	SC
9TYUAD	157.0	3.48 X	17.89	H	159.3	3.96 X	4.57	4	SC
CYVPMU	110.0	0.42	2.29		112.5	0.54	3.96	4	HY
DK9UNA	110.6	0.46	6.66		109.9	0.34	2.79	4	TM
FKJFBG	90.0	-0.89	8.12		86.9	-1.34	4.11	4	TM
JPJ2R9	103.0	-0.04	13.40	H	99.1	-0.45	4.00	4	SC
KBUL2E	94.8	-0.57	8.76		95.9	-0.68	5.64	4	TM
KPYKAL	112.0	0.55	2.00		116.2	0.81	3.14	4	TM
M9ZC74	90.6	-0.85	3.91		94.6	-0.78	2.91	4	TM
NK9E67	80.0	-1.54	5.34		94.6	-0.77	18.88	H	SC
QBV6QC	86.8	-1.10	5.57		88.2	-1.25	4.51	4	XX
QG4T4E	120.2	1.08	4.15		122.2	1.25	3.18	4	HY
VLGZVU	129.8	1.71	7.95		131.2	1.90 *	3.52	4	HY
YJYCK6	131.8	1.84	7.40		124.4	1.41	10.78	4	HZ

Consensus (All Labs) Results			
Month Mean	103.59	Grand Mean	105.17
Avg SD	6.42	Avg SD Months	6.79
SD btwn Labs	15.33	SD btwn Labs	13.65
Labs Incl	15	Labs Incl	15

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	101.43	14.96	2.17	12
Modified Scott Bond Mechanics	119.90	14.00	16.31	2

Analysis Notes

2R9FMM - Method used is not covered in this test. Data excluded from consensus calculation.

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 #575 (J)
August 2017

WebCode	Monthly Results				Cumulative Results			
	Mean	CPV	SD		Mean	CPV	SD Months	Months
2K6BWP	26.8	0.34	1.79		26.1	0.06	0.99	2
2R9FMM	25.8	0.04	0.84	L	26.7	0.25	1.27	2
3UQWFR	28.4	0.81	4.77		27.1	0.38	1.84	2
4CNE6M	29.0	0.99	4.69		27.3	0.44	2.40	2
7RUK7W	21.6	-1.19	1.52		22.8	-0.97	1.70	2
9TYUAD	31.2	1.63	5.67		29.5	1.12	2.40	2
AGHB9U	21.4	-1.25	3.51		24.3	-0.50	4.10	2
BHTQ2L	27.7	0.60	2.43		28.3	0.74	0.83	2
CYVPMU	17.7	-2.34 *	2.77		17.7	-2.57 *	0.07	2
DK9UNA	29.2	1.04	9.07	H	30.5	1.44	1.84	2
DT338F	21.8	-1.14	1.10		22.8	-0.97	1.41	2
FKJFBG	24.6	-0.31	3.21		26.7	0.25	2.97	2
FRGB9E	24.4	-0.37	2.30		24.3	-0.50	0.14	2
KA2EUW	28.2	0.75	4.02		29.7	1.19	2.12	2
KPYKAL	22.6	-0.91	1.82		20.6	-1.65	2.77	2
M9ZC74	27.8	0.63	3.27		25.7	-0.06	2.97	2
QBV6QC	24.0	-0.49	1.87		22.3	-1.12	2.40	2
V2ARFU	22.3	-0.99	4.32		24.9	-0.33	3.61	2
VLGZVU	26.2	0.16	5.12		27.5	0.50	1.84	2
WPD9C9	31.2	1.63	2.17		31.2	1.66	0.00	1
YKR8YZ	25.2	-0.13	1.30		26.1	0.06	1.27	2
YYTLHH	25.2	-0.13	4.44		26.4	0.16	1.70	2
Z7QX6	27.8	0.63	1.79		27.2	0.41	0.85	2

Consensus (All Labs) Results			
Month Mean	25.65	Grand Mean	25.90
Avg SD	3.71	Avg SD Months	2.14
SD btwn Labs	3.39	SD btwn Labs	3.20
Labs Incl	23	Labs Incl	23

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Containerboard Interlaboratory Testing Program
Analysis 237

Report #575 (J)
August 2017

Air Resistance, 42 lb Linerboard - 42D

TAPPI Official Test Method T460

WebCode	Monthly Results				Cumulative Results				Inst
	Mean	CPV	SD		Mean	CPV	SD Months	Months	
2K6BWP	15.5	-1.48	2.14		16.5	-1.26	0.79	4	LA
2R9FMM	20.3	1.29	1.38		20.2	1.44	0.64	4	LA
3UQWFR	18.2	0.09	1.23		17.9	-0.24	0.65	4	LP
4CNE6M	16.6	-0.81	2.85	H	16.4	-1.39	0.75	4	LA
6HLQDP	18.4	0.20	2.02		19.0	0.57	0.90	3	TL
7PKBFB	17.4	-0.37	1.84		17.4	-0.65	1.05	3	XX
9TYUAD	18.0	-0.02	1.70		17.7	-0.41	1.01	4	HG
CYVPMU	17.8	-0.11	1.44		18.3	0.00	1.32	4	TP
DK9UNA	18.6	0.30	1.66		18.6	0.24	0.52	4	LP
DT338F	15.8	-1.28	0.42	L	16.4	-1.36	0.94	4	XX
E72D6L	17.0	-0.57	0.90		17.3	-0.73	0.81	3	LW
EZEGPB	14.7	-1.91	1.21	*	16.0	-1.66	0.90	4	LA
FR3NV7	22.1	2.34	0.85	*	30.0	8.63	16.58	4	XX
G2MAHF	17.6	-0.27	2.64		18.1	-0.08	0.67	4	LA
GEMBVG	18.1	0.04	1.79		18.7	0.29	1.99	4	GG
GGF6U8	18.7	0.36	2.16		19.0	0.54	0.89	4	XX
HUF4FH	17.9	-0.08	1.37		18.1	-0.15	0.39	4	LP
JPJ2R9	18.9	0.47	1.91		19.6	0.97	0.67	4	LA
KPYKAL	18.4	0.20	1.74		17.9	-0.24	0.55	4	HG
M9ZC74	18.1	0.01	1.39		18.8	0.41	1.44	4	LA
PPY9GX	17.0	-0.61	1.33		17.7	-0.39	0.78	4	LP
QBV6QC	20.1	1.19	1.04		18.8	0.40	1.01	4	LP
R4V6TV	16.0	-1.17	1.97		17.7	-0.39	1.50	3	XX
V2ARFU	20.9	1.65	1.70		21.7	2.55	2.74	4	GA
VLGZVU	20.5	1.41	1.65		20.8	1.89	0.66	4	LP
YKR8YZ	16.5	-0.87	1.26		17.8	-0.35	1.03	4	LA

Consensus (All Labs) Results

Month Mean	18.04	Grand Mean	18.25
Avg SD	1.68	Avg SD Months	1.10
SD btwn Labs	1.75	SD btwn Labs	1.36
Labs Incl	26	Labs Incl	25



Containerboard Interlaboratory Testing Program
Analysis 237

Report #575 (J)
August 2017

Air Resistance, 42 lb Linerboard - 42D

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
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 #575 (J)
August 2017

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM91

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	
2R9FMM	54.9 *	52.6 X	54.5 *	54.3 *	54.1	-2.55 *	2.8	1.0	54.7	-2.30 *	2.8	1.0	16	LD
38E2JH	60.9	59.1	60.5	61.7	60.6	0.22	3.0	1.1	60.5	0.13	3.2	2.3	16	LC
3UQWFR	59.9	59.0	61.7	60.2	60.2	0.07	3.3	1.1	61.0	0.32	2.8	1.8	16	LC
3VJT32	60.3	60.1	60.2	60.3	60.2	0.08	2.3	0.1 L	59.9	-0.12	2.6	0.3 L	16	LD
4CNE6M	58.4	58.2 H	68.0 X	64.0 H	62.2	0.91	4.6	4.7 H	59.2	-0.43	4.2	3.3	16	XX
4LEZBL	60.3	62.0	61.1	60.8	61.1	0.44	2.6	0.7	60.1	-0.05	3.2	1.5	16	LD
6CL92Y	63.1	61.1	60.2	62.2	61.7	0.70	3.4	1.3	62.9	1.10	4.5	1.8	16	TU
6YUMTH	60.0	56.1	58.7	56.7	57.9	-0.92	2.7	1.8	58.9	-0.53	3.0	1.3	16	LD
7J2AXM	60.6	61.2	60.3	59.6	60.4	0.17	2.0	0.7	60.1	-0.05	2.5	0.6 L	16	LC
8JD4EM	57.9	60.7	60.6	59.6	59.7	-0.15	3.7	1.3	60.0	-0.07	3.0	1.5	16	LD
AGHB9U	54.9 *	55.6 *	56.3	57.1	55.9	-1.76	2.9	0.9	57.8	-1.01	3.0	1.7	16	LZ
BHTQ2L	58.2	57.8	57.5	55.6	57.3	-1.19	2.5	1.1	58.0	-0.91	2.9	2.0	16	EN
BJ2X4E	48.0 X	49.6 XL	47.7 XL	49.5 XL	48.7	-4.86 X	1.3	1.0	48.3	-4.96 X	3.2	1.3	16	TC
BMYG7D	58.7	59.6	61.2	60.7	60.1	0.01	3.4	1.1	59.3	-0.39	3.2	1.1	16	EM
BPPLYK	64.6	63.6	64.2	64.1	64.1	1.76	2.6	0.4	64.9	1.96 *	3.1	2.0	16	LD
CYVPMU	59.4	61.4	57.5	59.7	59.5	-0.22	3.3	1.6	61.0	0.34	3.3	1.6	16	LC
DA7HQU	63.8 L	64.3	64.2 L	63.4	63.9	1.67	1.4	0.4	63.7	1.44	1.4	1.5	16	TD
DWHFAN	57.7	60.1	61.0	57.3	59.0	-0.44	4.7	1.8	59.2	-0.41	5.0	1.6	16	TG
E72D6L	55.3	51.7 X	54.6 *	53.8 *	53.9	-2.64 *	3.4	1.6	54.6	-2.35 *	5.5	2.1	12	XX
ECRLXR	58.6	61.0	60.8	61.3	60.4	0.16	2.9	1.2	61.2	0.43	2.8	1.5	8	LD
EZEGPB	65.8 *	65.7 *	65.4 *	64.9 *	65.5	2.33 *	3.6	0.4	63.6	1.41	3.7	1.7	16	LC
FKJFBG	56.9	56.8	57.1	59.0	57.5	-1.11	3.1	1.0	58.4	-0.75	3.0	1.3	16	LD
FPBQKE	58.4	60.2 H	59.2	56.6	58.6	-0.61	3.9	1.5	58.5	-0.70	3.3	1.7	16	LZ
FR3NV7	72.3 X	71.5 X	71.4 X	68.8 X	71.0	4.69 X	4.4	1.5	67.5	3.05 X	3.6	4.7	16	MB
GGF6U8	61.2	58.7	59.9	61.5	60.3	0.12	2.3	1.3	60.6	0.16	3.2	1.1	16	LD
HG9KF3	61.5	61.6	61.1	62.0	61.5	0.65	3.1	0.4	60.3	0.06	2.6	1.1	16	LD
HV8BFL	61.1	63.8	60.3	60.8	61.5	0.63	3.4	1.6	61.6	0.59	2.6	2.6	16	LD
KA2EUW	64.2	63.6	63.0	58.0	62.2	0.93	2.8	2.8	62.7	1.02	3.8	3.5	16	XX
KWCTC9	59.9	60.2	60.9	60.6	60.4	0.16	3.0	0.4	60.3	0.04	2.8	0.5 L	16	LD
LRH4JG	63.4	61.6	60.3	60.4	61.4	0.60	2.1	1.5	61.3	0.46	2.5	1.8	16	MB
M9ZC74	59.1	57.3	62.0	62.4	60.2	0.07	3.9	2.4	58.9	-0.54	3.3	3.7	16	LC
NFG8KD	58.9	59.9	58.8	59.0	59.1	-0.38	2.2	0.5	58.6	-0.65	2.3	1.4	16	XX
NK9E67	60.1	58.8	55.0 *	55.0	57.2	-1.21	3.7	2.6	56.8	-1.41	3.5	2.6	16	LC
PCDUEY	59.9	59.8	60.3 L	60.0	60.0	-0.02	1.6	0.2 L	61.0	0.33	1.7	0.9	16	LD
PPY9GX	61.4	60.0	61.4	59.8	60.7	0.27	2.8	0.9	62.4	0.91	3.0	1.4	16	LD



Containerboard Interlaboratory Testing Program
Analysis 240

Report #575 (J)
August 2017

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM91

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	
PY496E	57.5	57.1	57.6	56.7	57.2	-1.21	2.4	0.4	57.9	-0.96	2.7	0.8	16	TH
QBV6QC	61.6 H	62.0	58.9	60.2	60.7	0.27	3.9	1.4	60.3	0.05	3.4	1.2	16	LZ
RDZEVE	60.5	62.5 L	61.6	58.7 L	60.8	0.34	1.7	1.6	66.5	2.63 * 3.3	11.7 H	16	MB	
UFDV4A	62.3 H	65.0 *H	65.5 *H	63.7 H	64.1	1.76	9.1	1.4	65.1	2.04 * 5.6	1.7	16	LC	
V2DGH7	58.8	59.8 L	59.7	59.9	59.6	-0.20	2.0	0.5	58.1	-0.87	2.6	1.7	14	LD
VAQ996	No DATA	59.8	60.5	61.1	60.5	0.19	2.3	0.7	60.1	-0.02	2.4	1.6	13	LC
VLGZVU	57.3	56.8	58.7	58.3	57.8	-0.96	3.9	0.9	58.9	-0.52	4.0	1.7	12	LD
WK6MMQ	62.7	64.4	63.6	No DATA	63.5	1.50	2.4	0.8	63.4	1.33	2.6	1.6	15	LZ
XGFXG4	60.9	59.9	60.2	58.3	59.8	-0.10	2.6	1.1	59.4	-0.32	2.9	1.1	16	TH
XVJ4UN	61.3	58.4	58.5	60.6	59.7	-0.15	2.9	1.5	60.1	-0.05	3.1	1.1	15	LD
Y49A6Z	58.0 H	57.3	61.7	56.8	58.4	-0.68	4.1	2.2	57.7	-1.04	3.4	2.1	16	MB
YJMA2Q	59.3	60.7	60.4	60.1	60.1	0.03	2.7	0.6	58.4	-0.75	2.8	1.7	16	LC
YJYCK6	59.1	60.9	60.8	61.4	60.6	0.22	3.2	1.0	60.9	0.29	4.4	2.6	16	LC
YKR8YZ	60.6	61.2	60.1	60.8	60.7	0.27	2.5	0.4	60.6	0.17	2.6	0.7 L	16	LD

Consensus (All Labs) Results									
Wk Mean	59.98	60.32	60.16	59.76	Month Mean	60.03	Grand Mean	60.20	
Avg SDR	3.30	3.52	3.29	3.05	Avg SD	3.29	Avg SD	3.27	
SD btwn Labs	2.41	2.40	2.46	2.56	SD btwn Labs	2.33	SD btwn Labs	2.41	
Labs Includ	46	45	46	46	SD btwn Wks	1.44	SD btwn Wks	2.45	
Labs Exclcd	2	4	3	2	Labs Includ	47	Labs Includ	47	
Labs not Rcvd	1	0	0	1					

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
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
Analysis 250

Report #575 (J)
August 2017

Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium - CM91
TAPPI Official Test Method T824

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
2R9FMM	75.7	76.0	77.3	74.1	75.8	0.78	2.5	1.3	75.3	0.65	2.4	1.1	16	LD
3UQWFR	71.9	77.0 H	72.5	75.9	74.3	0.04	3.6	2.5 H	74.8	0.40	2.6	1.9	16	XX
7PKBFK	73.6	73.0	72.9 L	73.2	73.2	-0.54	1.6	0.3	73.4	-0.25	1.7	0.5	12	XX
CYVPMU	77.5	76.8	76.5	78.3	77.3	1.52	1.8	0.8	77.4	1.68	2.1	0.9	16	LC
DA7HQU	73.8	72.6 L	75.4 L	72.3 L	73.5	-0.37	1.0	1.4	72.4	-0.74	1.0	1.3	16	TD
ECRLXR	74.7	74.5	74.1	71.9	73.8	-0.24	2.1	1.3	74.1	0.09	2.3	1.0	8	LD
FPBQKE	76.3	73.9	76.1	75.6	75.5	0.62	3.2	1.1	74.2	0.11	3.3	2.8	16	LZ
GGF6U8	72.7	71.4	73.5	71.4	72.3	-1.01	2.1	1.1	73.4	-0.26	2.3	1.4	16	XX
HG9KF3	72.4	72.6	72.4	73.4	72.7	-0.81	2.0	0.5	70.8	-1.54	1.9	1.3	16	LD
M9ZC74	77.7	73.0	75.1 H	77.6	75.9	0.81	3.3	2.2	73.8	-0.05	4.5	4.2 H	16	XX
PCDUEY	72.7	72.9	73.1	72.6	72.8	-0.71	1.5	0.2 L	72.5	-0.70	1.7	0.4 L	16	LD
PPY9GX	75.5	77.0	75.9	75.5	76.0	0.87	2.3	0.7	76.3	1.15	2.6	1.1	16	LD
RDZEVE	73.7	74.3	73.8	72.7	73.6	-0.32	3.0	0.7	73.5	-0.21	2.9	0.8	16	MB
VLGZVU	76.1	78.3 *L	79.6 *	79.0 *	78.2	2.01 *	2.2	1.5	78.0	1.97 *	2.2	1.2	12	LD
WK6MMQ	71.2	72.5	71.3	NO DATA	71.7	-1.31	1.8	0.7	72.0	-0.93	2.3	1.3	15	LZ
YKR8YZ	70.2	71.9	72.2	72.2	71.6	-1.34	2.3	0.9	71.1	-1.38	2.5	1.0	16	LD

Consensus (All Labs) Results														
Wk Mean	74.11	74.22	74.48	74.38	Month Mean	74.25			Grand Mean	73.94				
Avg SDr	2.40	2.54	2.36	2.24	Avg SD	2.38			Avg SD	2.50				
SD btwn Labs	2.22	2.13	2.22	2.45	SD btwn Labs	1.98			SD btwn Labs	2.06				
Labs Incl	16	16	16	15	SD btwn Wks	1.24			SD btwn Wks	1.65				
Labs Excl	0	0	0	0	Labs Incl	16			Labs Incl	16				
Labs not Rcvd	0	0	0	1										

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 - CM91
 TAPPI Official Test Method T822

Report #575 (J)
August 2017

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
2R9FMM	44.9	43.9	45.5	44.2	44.6	0.36	2.3	0.7	45.5	0.72	2.7	1.1	16	LD
3DXEFW	47.0	44.4	46.4	46.1	46.0	0.82	2.7	1.1	44.9	0.50	2.9	1.5	16	LZ
3VJT32	43.8 H	43.7 H	43.6 H	43.8 H	43.8	0.06	9.2	0.1 L	42.0	-0.46	5.6	2.5	16	LD
6CL92Y	38.8	39.2	40.1	39.0	39.3	-1.48	2.7	0.6	38.5	-1.64	2.4	1.2	16	TU
83844X	42.2	41.9	42.5	42.3	42.2	-0.47	2.4	0.3	43.1	-0.09	2.1	0.8	16	TH
89BXB9	35.4	39.4	35.2 X	35.6 *	36.4	-2.46 *	2.1	2.0	36.2	-2.44 *	2.5	1.8	16	LZ
8JD4EM	46.8	44.5	43.4	47.0	45.4	0.64	2.3	1.7	44.9	0.50	2.1	1.6	16	LD
AGHB9U	44.5	42.4	43.9	44.7	43.9	0.10	3.1	1.1	44.1	0.23	2.7	2.1	16	EM
BJ2X4E	30.4 *L	30.4 XL	30.3 XL	29.7 XL	30.2	-4.60 X	0.8	0.4	29.8	-4.57 X	4.2	0.7	16	TC
BMYG7D	43.6	44.8	44.0	45.1	44.3	0.27	1.8	0.7	44.0	0.20	2.3	0.8	16	LC
CYVPMU	44.8	44.1	46.1	45.2	45.0	0.50	3.2	0.8	45.2	0.61	3.1	0.9	16	LC
E72D6L	45.9	44.3	45.6	47.7	45.9	0.78	2.4	1.4	46.6	1.06	2.5	1.2	12	XX
EZEGPB	46.8	49.7 *	50.0 *	49.5	49.0	1.86	2.1	1.5	49.3	2.01 *	1.9	1.2	16	LD
FEVXVJ	42.5 L	41.5	41.2	42.7	42.0	-0.55	1.6	0.8	42.5	-0.29	1.4	1.0	16	WK
GGF6U8	42.8	42.4	42.1	42.8	42.5	-0.36	3.4	0.3	42.3	-0.38	3.0	0.7	16	LD
HV8BFL	40.5 L	45.0	44.7	44.9	43.8	0.08	2.2	2.2	42.8	-0.22	2.1	1.7	16	LD
PPY9GX	46.4	46.2	45.8	47.6	46.5	1.01	2.4	0.8	45.6	0.74	2.0	2.0	16	LD
PY496E	36.0 L	37.3 *	40.1	37.6 L	37.8	-2.00 *	1.5	1.7	37.0	-2.15 *	1.9	1.8	16	TH
RDZEVE	41.4	41.3	40.9	40.6	41.1	-0.86	2.2	0.4	42.1	-0.44	2.6	0.8	16	MB
UFDV4A	30.1 *	30.1 X	29.2 X	29.0 X	29.6	-4.79 X	3.0	0.6	31.6	-3.99 X	2.8	1.3	16	XX
V2DGH7	46.4	42.9	42.2	42.6	43.5	-0.02	1.7	1.9	43.4	0.00	2.5	1.6	15	LD
VAQ996	No DATA	46.0	48.0	46.2	46.7	1.07	2.1	1.1	44.1	0.24	2.4	2.6	13	LC
XVJ4UN	45.6	46.7	44.9	44.4	45.4	0.63	1.9	1.0	45.8	0.81	2.8	1.1	16	LZ
YJYCK6	44.9	42.1	45.2	45.1	44.3	0.25	2.3	1.5	44.5	0.37	2.6	1.5	16	LD
YKR8YZ	42.6	43.5	42.7	42.5	42.8	-0.26	2.7	0.4	43.8	0.13	2.6	0.9	16	LD

Consensus (All Labs) Results														
Wk Mean	42.26	43.35	44.04	43.79	Month Mean	43.57			Grand Mean	43.40				
Avg SDr	3.08	3.20	2.83	2.94	Avg SD	3.01			Avg SD	2.67				
SD btwn Labs	4.86	2.68	2.51	3.29	SD btwn Labs	2.91			SD btwn Labs	2.96				
Labs Incl	24	23	22	23	SD btwn Wks	1.20			SD btwn Wks	1.51				
Labs Excl	0	2	3	2	Labs Incl	23			Labs Incl	23				
Labs not Rcvd	1	0	0	0										



Containerboard Interlaboratory Testing Program
Analysis 255
Ring Crush (RCT), 26 lb Corrugating Medium - CM91
TAPPI Official Test Method T822

Report #575 (J)
August 2017

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



Containerboard Interlaboratory Testing Program
 Analysis 261
STFI, 26 lb Corrugating Medium - CM91
 TAPPI Official Test Method T826

Report #575 (J)
August 2017

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	
2R9FMM	15.4	15.1	15.2	14.9	15.1	1.54	1.1	0.2	15.0	1.46	1.0	0.3	16	LA
3DXEFW	14.0	13.3	13.7 H	13.9	13.7	-1.47	1.1	0.3	14.2	-0.93	1.0	0.4	16	LA
7J2AXM	14.5	15.0	14.3	14.0	14.5	0.08	0.8	0.4	14.4	-0.21	0.8	0.3	16	LB
AGHB9U	14.5	14.3	14.1	13.3 *	14.1	-0.78	1.0	0.5	14.6	0.18	1.1	0.8	16	LZ
BJ2X4E	14.1	14.7	14.0	14.4	14.3	-0.21	1.1	0.3	14.2	-0.94	1.1	0.3	16	TS
BMYG7D	14.5	14.8	14.6	14.6 L	14.6	0.38	1.0	0.1	14.1	-1.13	1.0	0.5	16	LB
CYVPMU	14.6	14.3	14.9	14.6	14.6	0.35	1.0	0.3	14.4	-0.33	0.9	0.3	16	LU
E72D6L	14.6 L	13.7	14.4 L	13.8	14.1	-0.67	0.8	0.4	14.1	-1.17	0.9	0.4	12	XX
ECRLXR	14.4	14.3	14.6	14.4 L	14.4	-0.01	0.8	0.1	14.6	0.19	0.9	0.3	8	LB
EWUGLN	15.5 *	15.7 *	14.8	15.5 *H	15.4	2.04 *	1.1	0.4	19.1	13.70 X	1.0	5.4 H	12	LH
EZEGPB	15.5 *	15.4	14.8	14.9	15.2	1.60	1.0	0.3	15.3	2.49 *	1.1	0.3	16	LA
FKJFBG	14.3	14.3	14.9	14.3	14.4	0.06	0.9	0.3	14.1	-1.09	1.0	0.3	16	LU
FR3NV7	13.5 L	13.2 *L	13.5 L	13.0 *L	13.3	-2.39 *	0.1	0.3	14.5	-0.16	0.1	1.0 H	16	BK
GF2FTF	14.2 L	13.7	14.3 L	14.6 H	14.2	-0.47	0.9	0.4	14.6	0.16	1.0	0.4	16	LA
HV8BFL	14.8	15.2	14.9	15.0	15.0	1.19	0.9	0.2	15.1	1.84	0.9	0.2	16	LH
KA2EUW	13.8	14.3	13.2 *H	13.9	13.8	-1.39	1.1	0.4	13.3	-3.60 X	1.0	0.6	16	XX
KWCTC9	14.0	14.4	15.0	14.7	14.5	0.19	0.8	0.4	14.4	-0.21	0.8	0.3	16	LB
PCDUEY	14.4 L	14.4	14.5	14.4	14.4	0.01	0.6	0.1	14.4	-0.31	0.6	0.3	16	LA
PPY9GX	15.1	14.3	14.2	14.4	14.5	0.22	0.8	0.4	14.5	-0.11	0.9	0.3	16	LZ
QBV6QC	14.3	14.4	14.1 L	14.3 L	14.3	-0.33	0.6	0.1	14.3	-0.68	0.9	0.3	16	LB
V2DGH7	14.1	14.3	14.2	14.3	14.2	-0.43	0.9	0.1	14.5	0.09	1.0	0.4	15	LZ
XGFXG4	14.3	14.2 L	14.6	14.6	14.4	-0.02	0.7	0.2	14.4	-0.35	0.7	0.2	16	TT
Y49A6Z	13.8	14.3 H	14.7	14.5	14.3	-0.18	1.2	0.4	16.0	4.51 X	0.6	8.4 H	16	LA
YJMA2Q	15.1 H	14.9	14.9 H	NO DATA	15.0	1.19	1.4	0.1	15.0	1.59	1.1	0.2	15	LW
YKR8YZ	13.9	14.5	14.2	14.1	14.2	-0.51	0.8	0.2	14.4	-0.38	0.9	0.2	16	LB

Consensus (All Labs) Results									
Wk Mean	14.44	14.44	14.42	14.35	Month Mean	14.42	Grand Mean	14.51	
Avg SDr	0.90	1.00	0.85	0.92	Avg SD	0.92	Avg SD	0.92	
SD btwn Labs	0.54	0.60	0.48	0.54	SD btwn Labs	0.47	SD btwn Labs	0.34	
Labs Incl	25	25	25	24	SD btwn Wks	0.31	SD btwn Wks	0.42	
Labs Excl	0	0	0	0	Labs Incl	25	Labs Incl	22	
Labs not Rcvd	0	0	0	1					



Containerboard Interlaboratory Testing Program
Analysis 261
STFI, 26 lb Corrugating Medium - CM91
TAPPI Official Test Method T826

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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)	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