



## Containerboard Interlaboratory Testing Program

Participant Summary Report #623 (J) - August 2021

---

[Introduction to the Containerboard Program](#)

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

<b>Analysis</b>	<b>Sample</b>	<b>Analysis Name</b>
<a href="#"><u>201</u></a>	<a href="#"><u>BX15</u></a>	<a href="#"><u>Top to Bottom Box Compression Strength, Corrugated Boxes</u></a>
<a href="#"><u>202</u></a>	<a href="#"><u>EC13</u></a>	<a href="#"><u>Edgewise Compressive Strength, by T811, Corrugated Board</u></a>
<a href="#"><u>203</u></a>	<a href="#"><u>EC13</u></a>	<a href="#"><u>Edgewise Compressive Strength by T839, Corrugated Board</u></a>
<a href="#"><u>205</u></a>	<a href="#"><u>42F4</u></a>	<a href="#"><u>Bursting Strength (Mullen), 42 lb Linerboard</u></a>
<a href="#"><u>207</u></a>	<a href="#"><u>35E2</u></a>	<a href="#"><u>Bursting Strength (Mullen), 35 lb Linerboard</u></a>
<a href="#"><u>215</u></a>	<a href="#"><u>42F4</u></a>	<a href="#"><u>Ring Crush, 42 lb Linerboard</u></a>
<a href="#"><u>217</u></a>	<a href="#"><u>35E2</u></a>	<a href="#"><u>Ring Crush, 35 lb Linerboard</u></a>
<a href="#"><u>223</u></a>	<a href="#"><u>42F4</u></a>	<a href="#"><u>STFI, 42 lb Linerboard</u></a>
<a href="#"><u>225</u></a>	<a href="#"><u>35E2</u></a>	<a href="#"><u>STFI, 35 lb Linerboard</u></a>
<a href="#"><u>228</u></a>	<a href="#"><u>42F</u></a>	<a href="#"><u>Roughness - Stylus Method, 42 lb Linerboard</u></a>
<a href="#"><u>229</u></a>	<a href="#"><u>42F4</u></a>	<a href="#"><u>Roughness - Sheffield Method, 42 lb Linerboard</u></a>
<a href="#"><u>231</u></a>	<a href="#"><u>42F</u></a>	<a href="#"><u>Internal Bond, 42 lb Linerboard</u></a>
<a href="#"><u>234</u></a>	<a href="#"><u>42F</u></a>	<a href="#"><u>COF Inclined Plane (Slide Angle), 42 lb Linerboard</u></a>
<a href="#"><u>237</u></a>	<a href="#"><u>42F4</u></a>	<a href="#"><u>Air Resistance, 42 lb Linerboard</u></a>
<a href="#"><u>240</u></a>	<a href="#"><u>CM12</u></a>	<a href="#"><u>Flat Crush Strength (CMT), 26 lb Corrugating Medium</u></a>
<a href="#"><u>250</u></a>	<a href="#"><u>CM12</u></a>	<a href="#"><u>Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium</u></a>
<a href="#"><u>255</u></a>	<a href="#"><u>CM12</u></a>	<a href="#"><u>Ring Crush (RCT), 26 lb Corrugating Medium</u></a>
<a href="#"><u>261</u></a>	<a href="#"><u>CM12</u></a>	<a href="#"><u>STFI, 26 lb Corrugating Medium</u></a>

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; 35 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.

<b>Material</b>	<b>Lot Code</b>	<b>Dates in Use</b>
26# Corrugating Medium	CM12	July 2021 - Current
	CM11	April 2019 - June 2021
35# Corrugating Medium	35E2	June 2020 - Current
	35E1	June 2017 - April 2020
42# Corrugating Medium	42F4	August 2021 - Current
	42F3	November 2020 - July 2021
56# Corrugating Medium	56G2	May 2021 - Current
	56G1	January 2020 - March 2021

### 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

## 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'.
- Labs Incl - The number of laboratory Means included in the Grand Mean.

**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>
-------------	--------------------

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 #623 (J)  
August 2021

Top to Bottom Box Compression Strength, Corrugated Boxes - BX15

TAPPI Official Test Method T804

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
6AQ7UQ	851.8	0.56	67.82	826.1	0.29	30.86	4	ER
7AX2R3	847.6	0.47	43.55	822.9	0.22	19.60	4	LL
7U74P8	881.2	1.13	38.90	874.2	1.28	19.86	4	EM
8L8ZWU	856.2	0.64	112.59	841.5	0.60	30.61	4	EX
8UML7Y	837.6	0.28	55.35	833.0	0.43	40.43	4	ER
922M69	870.4	0.92	30.26	872.7	1.25	21.23	4	LG
9BQERZ	865.0	0.81	26.70	823.7	0.24	28.92	4	LS
9W7WYW	918.2	1.85	16.55	912.9	2.08 *	4.57 L	4	EX
B8HZYR	796.1	-0.53	81.13	812.6	0.01	36.44	4	EX
BCC2XK	770.9	-1.02	69.40	775.9	-0.75	52.38	4	ER
CUQV4Z	841.4	0.35	66.70	824.4	0.25	17.28	4	EX
DMKGXP	833.2	0.19	22.58	851.7	0.82	26.91	4	LG
F762NP	868.0	0.87	33.98	869.6	1.18	22.26	4	ER
FXEEXU	776.0	-0.92	54.02	818.4	0.13	50.36	4	LS
FXVR2W	714.4	-2.12 *	39.91	731.2	-1.67	16.11	4	LG
G4YYEE	830.8	0.15	85.08	814.5	0.05	43.93	4	ES
GCRAQV	779.5	-0.85	25.14	783.2	-0.60	31.37	3	LS
H7ZJG6	919.1	1.87	21.02	867.2	1.14	36.33	4	LO
KZ77TL	719.3	-2.02 *	109.83	768.0	-0.91	36.11	4	LM
L3R8FL	740.6	-1.61	51.69	746.3	-1.36	20.34	4	LL
LV7CEH	629.6	-3.77 X	11.04 L	705.6	-2.20 *	71.41	4	TB
LXVNB3	823.8	0.01	25.13	789.8	-0.46	35.78	4	LM
LYUQ3R	824.9	0.03	39.89	835.8	0.49	55.21	4	LG
ND66JF	802.6	-0.40	37.59	828.1	0.33	32.50	4	LG
PJ7PWB	815.5	-0.15	22.79	757.7	-1.12	57.14	4	LL
RKABM9	829.6	0.12	71.28	797.5	-0.30	51.42	4	LJ
W9FRP6	779.8	-0.85	79.27	786.9	-0.52	47.81	4	LH
X4K37C	651.7	-3.34 X	23.50	729.8	-1.70	70.01	4	LS
Z288E6	850.0	0.52	50.28	860.5	1.00	12.13	3	EX
ZUPYQ8	807.5	-0.31	106.93	804.5	-0.16	48.94	4	ET

Consensus (All Labs) Results

Month Mean	823.25	Grand Mean	812.20
Avg SD	59.82	Avg SD Months	39.19
SD btwn Labs	51.36	SD btwn Labs	48.47
Labs Incd	28	Labs Incd	30



Containerboard Interlaboratory Testing Program  
Analysis 201

Report #623 (J)  
August 2021

**Top to Bottom Box Compression Strength, Corrugated Boxes - BX15**

TAPPI Official Test Method T804

**Consensus By Method**

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	816.76	72.46	6.49	9
Water based adhesive sealing	881.20	0.00	57.95	1
Clip sealing	823.28	38.72	0.03	18

**Key to Instrument Codes Reported by Participants**

EM	Emerson 1200	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	LJ	TLS / L.A.B. Val Series
LL	Lansmont 76-5K	LM	Lansmont 122-15k
LO	Lansmont 152-30k	LS	Lansmont Squeezer
TB	TMI Monitor/Compression Tester, Model 17-70		



**Containerboard Interlaboratory Testing Program**  
 Analysis 202  
**Edgewise Compressive Strength, by T811, Corrugated Board - EC13**  
 TAPPI Official Test Method T811

**Report #623 (J)**  
**August 2021**

WebCode	Monthly Results				Cumulative Results				
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
7UPRC9	41.0	-1.66	0.82	L	39.9	-1.40	1.10	3	TD
9BQERZ	43.3	-0.52	2.00		43.1	-0.11	0.96	4	LD
9W7WYW	44.5	0.11	1.70		42.9	-0.17	1.09	4	LC
BCC2XK	42.1	-1.11	3.07		44.1	0.33	1.36	4	EN
CUQV4Z	45.5	0.62	2.41		43.8	0.21	1.35	4	LC
DMKGXP	44.2	-0.05	1.07	L	44.8	0.61	1.14	4	EM
MQB69E	47.5	1.61	1.56		47.0	1.49	0.92	4	LC
ND66JF	43.3	-0.52	1.33	L	42.4	-0.38	1.12	4	LE
NTD78Q	45.0	0.36	7.69	H	43.0	-0.13	2.55	4	XX
X4K37C	31.0	-6.67	2.82	X	33.3	-4.06	1.85	4	EM
YHGYFN	36.5	-3.92	2.53	X	38.9	-1.80	1.84	4	LD
Z4B6J6	46.6	1.17	1.35		46.7	1.36	1.74	4	XX

Consensus (All Labs) Results			
Month Mean	44.31	Grand Mean	43.32
Avg SD	2.99	Avg SD Months	1.46
SD btwn Labs	2.00	SD btwn Labs	2.48
Labs Incl	10	Labs Incl	11

**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
XX	Instrument make/model not specified by lab		



**Containerboard Interlaboratory Testing Program**  
 Analysis 203  
**Edgewise Compressive Strength by T839, Corrugated Board - EC13**  
 TAPPI Official Test Method T839

**Report #623 (J)**  
**August 2021**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD	Months	Inst
6AQ7UQ	46.8	0.66	1.72	46.9	0.74	0.81	4	LD
7AX2R3	45.4	0.09	1.10	46.0	0.37	1.08	4	BU
7U74P8	38.8	-2.53 *	2.84 H	39.4	-2.34 *	1.85	4	TH
7UPRC9	44.0	-0.45	0.82	42.3	-1.13	1.31	4	TD
8L8ZWU	44.2	-0.37	1.49	45.7	0.25	2.14	4	LD
8UML7Y	45.0	-0.04	3.04 H	45.8	0.29	1.16	4	LD
922M69	50.9	2.30 *	1.46	47.7	1.08	4.37 H	4	MK
9BQERZ	45.1	-0.04	2.01	44.3	-0.34	0.93	4	LD
9KR46V	46.1	0.37	0.55 L	45.8	0.27	0.97	3	LC
9W7WYW	48.8	1.43	1.94	47.9	1.14	1.13	4	LC
B8HZYR	45.6	0.20	1.16	45.5	0.16	1.21	4	TL
BCC2XK	46.4	0.49	2.30	45.5	0.16	1.08	4	EN
CUQV4Z	46.8	0.65	1.24	46.1	0.41	0.76	4	LC
ENDY9P	34.1	-4.40 X	0.95	39.2	-2.41 *	4.33 H	4	TD
F762NP	46.2	0.42	1.07	45.6	0.22	0.40	4	EM
FXEEXU	48.8	1.45	0.92	49.8	1.93 *	2.15	4	TB
G4YYEE	47.1	0.79	1.05	47.2	0.86	0.33	4	LD
GPJVWQ	42.1	-1.22	1.58	43.8	-0.53	2.02	4	LD
H7ZJG6	43.0	-0.85	2.00	43.0	-0.85	0.52	4	LD
KZ77TL	41.9	-1.29	1.57	43.9	-0.48	1.41	4	TG
LV7CEH	45.5	0.16	0.51 L	48.1	1.22	2.08	4	LD
LXVNB3	45.7	0.22	1.94	45.9	0.35	0.51	4	EM
M2P6YF	44.3	-0.32	1.40	46.8	0.69	2.68	4	XX
MQB69E	47.4	0.89	1.24	47.2	0.87	0.44	4	LC
ND66JF	46.4	0.51	1.11	46.3	0.49	0.52	4	LY
NTD78Q	43.6	-0.60	2.61 H	43.8	-0.51	0.94	4	XX
P9LCXF	46.4	0.50	1.10	48.1	1.24	1.52	4	LD
PJ7PWB	42.6	-1.00	1.59	43.9	-0.48	1.64	4	LC
PVDVNP	44.9	-0.11	1.03	42.3	-1.14	2.68	4	TD
THYW9E	48.1	1.18	1.36	46.7	0.68	2.87	3	EM
VJPJY9	48.1	1.19	1.18	47.4	0.96	1.27	4	TG
VMPVV9	35.1	-4.00 X	1.86	37.6	-3.06 X	2.63	4	XX
W9FRP6	43.0	-0.84	1.40	44.2	-0.37	1.59	4	EM
X4K37C	40.9	-1.68	1.68	41.0	-1.66	1.20	4	EM
XQXV66	34.3	-4.29 X	1.23	36.4	-3.54 X	4.50 H	4	TK
YHGYFN	40.8	-1.72	1.48	41.5	-1.46	2.30	4	LD
Z288E6	43.4	-0.70	1.89	43.1	-0.80	0.35	3	CT
Z4B6J6	46.2	0.43	1.97	46.5	0.58	1.16	4	XX
ZUPYQ8	44.7	-0.19	1.01	44.0	-0.46	1.81	4	TD





Containerboard Interlaboratory Testing Program  
Analysis 203  
**Edgewise Compressive Strength by T839, Corrugated Board - EC13**  
TAPPI Official Test Method T839

**Report #623 (J)**  
**August 2021**

Consensus (All Labs) Results			
Month Mean	45.14	Grand Mean	45.08
Avg SD	1.61	Avg SD Months	1.78
SD btwn Labs	2.52	SD btwn Labs	2.44
Labs Incd	36	Labs Incd	37

**Key to Instrument Codes Reported by Participants**

- |   |  |
|---|--|
| <p><b>BU</b> Buchel Digital Crush Tester</p> <p><b>EM</b> Emerson 1200 Series</p> <p><b>LC</b> L&amp;W Crush Tester 48</p> <p><b>LY</b> L&amp;W 830</p> <p><b>TB</b> TMI Monitor/Compression Tester, Model 17-70</p> <p><b>TG</b> TMI Digital Crush Tester, 17-76</p> <p><b>TK</b> TLS Compression Tester, Model 5184</p> <p><b>XX</b> Instrument make/model not specified by lab</p> | <p><b>CT</b> Con-Ten</p> <p><b>EN</b> Emerson 2200</p> <p><b>LD</b> L&amp;W Crush Tester 248</p> <p><b>MK</b> Mark-10 ESM303</p> <p><b>TD</b> TMI Digital Crush Tester, Model 17-09</p> <p><b>TH</b> TMI Monitor/Compression Tester, Model 17-76</p> <p><b>TL</b> Tech-Lab Systems Compression</p> |
|---|--|



**Containerboard Interlaboratory Testing Program**  
 Analysis 205  
**Bursting Strength (Mullen), 42 lb Linerboard - 42F4**  
 TAPPI Official Test Method T807

**Report #623 (J)**  
**August 2021**

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	
2AGXD2	108.0	108.4	109.0	109.9	108.8	-0.51	7.2	0.8	108.8	-0.51	7.2	0.8	4	LA
2BUQ94_AL	118.5	115.6	114.0 H	114.0	115.5	1.67	9.8	2.1	115.5	1.67	9.8	2.1	4	AL
2MHUCT_AL	114.9	111.3	112.1	110.2	112.1	0.57	8.9	2.0	112.1	0.57	8.9	2.0	4	AL
2Y2439	130.3 X	129.5 X	126.6 X	119.8 *	126.6	5.28 X	9.0	4.8	126.6	5.28 X	9.0	4.8	4	AX
34Q97W_AL	113.5	112.3	109.8	112.2	112.0	0.52	8.5	1.5	112.0	0.52	8.5	1.5	4	AL
3DBE4Z	114.5	112.4	110.5	110.7	112.0	0.54	8.8	1.9	112.0	0.54	8.8	1.9	4	LC
3H9WKZ	110.6	111.6	113.9	108.7	111.2	0.26	6.9	2.2	111.2	0.26	6.9	2.2	4	TP
3XKCMW_AI	104.1	111.5	112.9	109.0	109.4	-0.33	8.9	3.9	109.4	-0.33	8.9	3.9	4	AL
4NQQU3	112.8	112.0	116.2	110.9 H	113.0	0.84	12.0	2.3	113.0	0.84	12.0	2.3	4	LA
4UF7KV_AL	111.7	110.2	110.1	110.6	110.6	0.08	7.4	0.7	110.6	0.08	7.4	0.7	4	AL
4XFCZ2	111.6	105.2	107.3	107.0	107.8	-0.85	10.1	2.7	107.8	-0.85	10.1	2.7	4	LA
62BPZV	114.6	108.6	105.4	110.0	109.7	-0.24	9.0	3.8	109.7	-0.24	9.0	3.8	4	AH
62BPZV_AL	116.5 H	113.3	116.8	119.2 *	116.5	1.98 *	11.0	2.4	116.5	1.98 *	11.0	2.4	4	AL
6AQTUQ	104.0	105.7	101.3 *	105.8	104.2	-2.02 *	10.0	2.1	104.2	-2.02 *	10.0	2.1	4	AH
6MCGL3	130.6 X	129.5 X	127.3 X	130.4 X	129.5	6.22 X	6.2	1.5	129.5	6.22 X	6.2	1.5	4	AH
6QPGF9	101.4 *	103.5	106.3	111.5	105.7	-1.54	7.6	4.4	105.7	-1.54	7.6	4.4	4	LA
7QRG2U	114.6	114.2	115.1	114.3	114.6	1.36	5.7	0.4 L	114.6	1.36	5.7	0.4 L	4	LA
7UPRC9	107.6	108.4	109.7 H	109.3	108.8	-0.54	12.1	0.9	108.8	-0.54	12.1	0.9	4	XX
8L8ZWU	110.4	107.2	107.6	108.0	108.3	-0.68	9.0	1.4	108.3	-0.68	9.0	1.4	4	AH
8LUAB6	102.6	101.2 *	100.6 *	97.4 X	100.5	-3.25 X	9.4	2.2	100.5	-3.25 X	9.4	2.2	4	XX
8UML7Y	108.5	111.5	106.4	108.3	108.7	-0.55	8.6	2.1	108.7	-0.55	8.6	2.1	4	LZ
9BNNJW	109.9	107.3	115.6	106.8	109.9	-0.16	8.3	4.0	109.9	-0.16	8.3	4.0	4	LJ
9BQERZ	111.6	110.2	106.4	106.5	108.7	-0.56	8.1	2.6	108.7	-0.56	8.1	2.6	4	LA
9NT46R_AL	113.6	109.3	106.7	106.9	109.1	-0.42	6.7	3.2	109.1	-0.42	6.7	3.2	4	AL
9W7WYW	106.2	105.2	107.4	110.1	107.2	-1.03	11.8	2.1	107.2	-1.03	11.8	2.1	4	AH
AN8VVN	107.4	111.3	109.1	103.4	107.8	-0.85	8.7	3.4	107.8	-0.85	8.7	3.4	4	TP
BAK3JL	96.2 X	95.9 X	96.4 X	102.0 *	97.6	-4.17 X	8.1	2.9	97.6	-4.17 X	8.1	2.9	4	LA
BQ8JMH	110.1	115.4	116.3	114.7	114.1	1.21	7.0	2.8	114.1	1.21	7.0	2.8	4	LA
BQ8JMH_AL	112.4	115.2	115.0	113.8	114.1	1.22	7.2	1.3	114.1	1.22	7.2	1.3	4	AL
CZCQ3H	106.9	109.8	108.7	111.1	109.1	-0.42	8.4	1.8	109.1	-0.42	8.4	1.8	4	LZ
DKEYYT	106.1	106.3 L	No DATA	107.0	106.5	-1.28	3.9	0.5 L	106.5	-1.28	3.9	0.5 L	3	XX
EFZMGJ	106.5	106.6	112.6	111.2	109.2	-0.38	9.9	3.1	109.2	-0.38	9.9	3.1	4	XX
F39FXM	111.3	111.2	111.5	111.5	111.4	0.32	5.2	0.2 L	111.4	0.32	5.2	0.2 L	4	LJ
FH4XQR	114.3	113.0	107.4	112.5	111.8	0.46	7.3	3.0	111.8	0.46	7.3	3.0	4	LC
G4YYEE	110.0	108.9	112.4	107.7	109.8	-0.21	7.9	2.0	109.8	-0.21	7.9	2.0	4	LA



**Containerboard Interlaboratory Testing Program**  
 Analysis 205  
**Bursting Strength (Mullen), 42 Ib Linerboard - 42F4**  
 TAPPI Official Test Method T807

**Report #623 (J)**  
**August 2021**

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	
GA4V3K	108.7	110.7	111.8	103.4	108.6	-0.57	9.5	3.7	108.6	-0.57	9.5	3.7	4	LC
GA4V3K_AL	112.6	109.1	114.0	112.8	112.1	0.57	9.8	2.1	112.1	0.57	9.8	2.1	4	AL
GHHLNC_AL	117.2	110.5	90.9 X	110.4	107.2	-1.03	7.0	11.4 H	107.2	-1.03	7.0	11.4 H	4	AK
H4WTCB_AL	116.6	108.2	117.5	112.3 L	113.6	1.06	6.0	4.2	113.6	1.06	6.0	4.2	4	AL
ND66JF	112.0	114.1	115.6	111.3	113.3	0.93	9.2	2.0	113.3	0.93	9.2	2.0	4	AH
P9LCXF_AL	116.1	113.8	115.8	115.2	115.2	1.58	8.0	1.0	115.2	1.58	8.0	1.0	4	AK
QQ28L8	104.6 L	100.8 *	104.4 L	105.5	103.8	-2.14 *	5.1	2.1	103.8	-2.14 *	5.1	2.1	4	LA
RFUPQV	109.2	107.0	108.6	106.4	107.8	-0.85	7.1	1.3	107.8	-0.85	7.1	1.3	4	LB
RWKWL8	108.7	108.6	108.5	107.8	108.4	-0.65	9.9	0.4 L	108.4	-0.65	9.9	0.4 L	4	LA
UHFD2L_AL	114.7	106.8	105.8	107.8	108.8	-0.53	9.5	4.1	108.8	-0.53	9.5	4.1	4	AK
UZXC7J	122.7 *	121.0 X	125.5 X	129.2 XH	124.6	4.64 X	12.2	3.6	124.6	4.64 X	12.2	3.6	4	AC
VAX4B4_AL	117.4	111.2 H	112.9	114.6	114.0	1.19	9.3	2.6	114.0	1.19	9.3	2.6	4	AL
WABBQ7	110.6	110.3	109.3	110.4	110.2	-0.08	6.7	0.6	110.2	-0.08	6.7	0.6	4	AH
WF2PDR	121.0 *	112.4	112.4	120.3 *	116.5	2.00 *	8.3	4.8	116.5	2.00 *	8.3	4.8	4	TB
WQKY47	106.1	112.8	112.2	118.3 *	112.3	0.64	9.3	5.0	112.3	0.64	9.3	5.0	4	LC
WQKY47_AL	106.1	111.9	117.4	109.6	111.2	0.27	9.5	4.8	111.2	0.27	9.5	4.8	4	AL
XUY2LV	118.5	111.7 H	111.4	113.0	113.6	1.05	13.0	3.3	113.6	1.05	13.0	3.3	4	TB
XXVKNL_AL	102.4	105.6	108.5	106.8	105.8	-1.49	7.9	2.6	105.8	-1.49	7.9	2.6	4	XX
Y2AHTV	116.0	105.8	113.5	108.8	111.0	0.21	7.9	4.6	111.0	0.21	7.9	4.6	4	LA
YHGYFN	111.1	104.9	107.8	108.6	108.1	-0.75	6.9	2.6	108.1	-0.75	6.9	2.6	4	LA
YQACEN_AL	109.5	111.7	105.3	111.3	109.5	-0.31	9.4	2.9	109.5	-0.31	9.4	2.9	4	AL
Z288E6	108.5 H	113.0	110.0 H	112.5	111.0	0.20	11.5	2.1	111.0	0.20	11.5	2.1	4	XX
Z4B6J6	114.6 L	115.2 L	116.0 L	115.1 L	115.2	1.58	2.1	0.6	115.2	1.58	2.1	0.6	4	LC
ZTEYRR	110.6	103.4 L	106.4	104.4	106.2	-1.37	7.6	3.2	106.2	-1.37	7.6	3.2	4	LC

Consensus (All Labs) Results														
Wk Mean	111.11	109.70	110.54	110.38	Month Mean	110.39			Grand Mean	110.39				
Avg SDr	8.55	8.69	8.93	8.47	Avg SD	8.62			Avg SD	8.62				
SD btwn Labs	4.73	3.57	4.10	3.97	SD btwn Labs	3.06			SD btwn Labs	3.06				
Labs Incl	56	55	53	56	SD btwn Wks	3.11			SD btwn Wks	3.11				
Labs Excl	3	4	5	3	Labs Incl	54			Labs Incl	54				
Labs not Rcvd	0	0	1	0										



Containerboard Interlaboratory Testing Program  
Analysis 205  
**Bursting Strength (Mullen), 42 lb Linerboard - 42F4**  
TAPPI Official Test Method T807

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

<b>AC</b>	Perkins Model C	<b>AH</b>	Perkins Model AH
<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>AX</b>	Perkins Mullen Tester (model not specified)	<b>LA</b>	L&W Bursting Strength Tester
<b>LB</b>	L&W Burst-O-Matic	<b>LC</b>	L&W Autoline (205 Enrollment)
<b>LJ</b>	L&W Bursting Strength Tester J-Type	<b>LZ</b>	L&W (model not specified)
<b>TB</b>	TMI Monitor/Burst 1000	<b>TP</b>	Technidyne PROFILE/Plus
<b>XX</b>	Instrument make/model not specified by lab		



**Containerboard Interlaboratory Testing Program**  
 Analysis 207  
**Bursting Strength (Mullen), 35 lb Linerboard - 35E2**  
 TAPPI Official Test Method T807

**Report #623 (J)**  
**August 2021**

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	
2AGXD2	91.4	91.6	88.0	94.1	91.3	-0.45	6.0	2.5	90.8	-0.62	5.9	3.1	12	LA
2BUQ94_AL	92.0	92.7 H	94.7	97.9	94.3	0.41	9.6	2.6	97.4	1.61	8.6	3.8	12	AL
2MHUCT_AL	91.4	92.1	90.6	91.9 L	91.5	-0.39	5.5	0.7	93.0	0.12	5.8	1.9	12	AL
2Y2439	105.5XH	104.8XH	101.8 *H	95.5	101.9	2.54 *	12.2	4.6	99.0	2.15 *	11.0	4.6	12	AX
34Q97W_AL	94.1	92.4	95.1 L	92.8	93.6	0.20	6.5	1.2	91.7	-0.31	9.9	8.5 H	12	AL
3DBE4Z	91.2	88.0 H	88.1	89.0	89.1	-1.06	9.5	1.5	92.9	0.11	7.6	3.3	12	LC
3H9WKZ	91.4	91.1	89.8	93.3	91.4	-0.41	7.0	1.4	91.3	-0.43	6.0	1.5	12	TP
3XKCMW_AI	95.6	87.1	91.8	87.1	90.4	-0.70	8.9	4.1	92.5	-0.05	8.9	3.4	12	AL
4NQQU3	97.2	95.6	97.4	94.8	96.3	0.95	9.8	1.3	97.5	1.64	8.7	2.5	12	LA
4UF7KV_AL	94.9	93.3	92.9	91.0	93.0	0.04	6.0	1.6	93.5	0.30	6.4	2.1	12	AL
4XFCZ2	90.6	95.4	91.8	95.0	93.2	0.10	8.2	2.4	91.6	-0.35	8.6	2.7	12	LA
62BPZV	92.0	97.2	94.2	97.2	95.2	0.64	6.7	2.5	93.9	0.43	7.4	3.3	12	AH
62BPZV_AL	90.3	91.1	93.4	91.6	91.6	-0.36	7.8	1.3	92.7	0.02	7.2	3.9	12	AL
6AQ7UQ	88.6	86.0	89.5	86.5	87.7	-1.47	8.1	1.7	86.7	-1.97 *	7.8	2.2	12	AH
6MCGL3	106.9 X	105.8 X	108.2 X	107.6 X	107.1	4.01 X	4.2	1.0	107.1	4.88 X	4.2	1.0	4	AH
6QPGF9	88.0	87.2	87.9	91.4	88.6	-1.20	8.7	1.9	87.6	-1.68	8.7	2.9	12	LA
7QRG2U	95.2	96.8	96.0	96.5	96.1	0.92	5.0	0.7	97.3	1.56	6.2	2.6	12	LA
7UPRC9	87.6	84.5 *	87.0	88.8	87.0	-1.66	7.4	1.8	87.3	-1.79	8.5	1.4	12	XX
8L8ZWU	93.0	88.8	92.4	82.8 *	89.3	-1.02	7.8	4.7	91.6	-0.36	11.2	4.4	12	AH
8LUAB6	80.5 X	87.8	87.1	89.4	86.2	-1.88	9.2	3.9	86.2	-2.16 *	9.2	3.9	4	XX
8UML7Y	86.7	91.7	92.2	86.7	89.3	-0.99	8.1	3.0	90.9	-0.58	8.3	3.4	12	LA
9BNNJW	90.0	88.1	86.5	91.6	89.0	-1.08	7.7	2.2	90.3	-0.79	8.6	2.8	12	LJ
9BQERZ	91.6	90.5	87.2	89.9	89.8	-0.86	7.7	1.9	91.0	-0.54	7.2	3.3	12	LA
9NT46R_AL	91.8	93.2	94.4	91.0	92.6	-0.09	7.2	1.5	92.8	0.05	6.4	1.2	12	XX
9W7WYW	93.1	92.9	88.4	86.6	90.3	-0.74	8.8	3.3	90.2	-0.80	8.7	3.1	12	AH
AN8VVN	97.5	92.5	87.6	93.9	92.9	0.00	7.9	4.1	91.4	-0.41	8.3	3.7	12	TP
BAK3JL	79.3 X	83.1 *	83.9 *	83.0 *	82.3	-2.97 X	8.0	2.1	83.0	-3.25 X	7.6	2.7	8	LA
BQ8JMH	96.3	94.6	98.7	86.3	94.0	0.31	9.6	5.4	92.0	-0.20	8.3	3.9	12	LA
BQ8JMH_AL	97.1	97.3	93.7	95.2	95.8	0.83	7.1	1.7	94.0	0.47	6.5	2.0	12	AL
CZCQ3H	91.9	94.8	92.9	93.3	93.2	0.09	8.9	1.2	92.6	0.00	8.2	2.2	10	LZ
DKEYYT	87.5	86.3	No DATA	87.3 L	87.0	-1.64	3.5	0.6	87.7	-1.65	4.0	0.9 L	11	XX
EFZMGJ	97.2	98.2	93.0	91.6	95.0	0.60	8.7	3.2	90.8	-0.61	8.1	5.1	8	XX
F39FXM	91.9	91.9	91.6	91.8	91.8	-0.31	4.8	0.1 L	91.7	-0.32	4.6	0.3 L	8	LJ
FH4XQR	96.6	92.4	93.6	92.6	93.8	0.26	8.5	1.9	91.8	-0.27	8.6	3.2	8	LC
G4YYEE	89.2	88.7	93.7	87.4	89.8	-0.88	8.1	2.7	88.7	-1.30	8.7	2.2	12	LA



**Containerboard Interlaboratory Testing Program**  
 Analysis 207  
**Bursting Strength (Mullen), 35 lb Linerboard - 35E2**  
 TAPPI Official Test Method T807

**Report #623 (J)**  
**August 2021**

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	
GA4V3K	91.4	97.6	91.0	89.1	92.3	-0.17	8.2	3.7	93.0	0.12	7.7	3.1	6	LC
GA4V3K_AL	93.5	94.6	96.1	96.3	95.1	0.63	8.1	1.3	94.7	0.72	9.3	1.2	6	AL
GHHLNC_AL	94.4	97.8	90.9	84.6	91.9	-0.27	7.0	5.7	92.3	-0.12	7.9	3.3	12	AK
H4WTCB_AL	94.1	96.5	108.0 <b>XH</b>	97.8	99.1	1.75	13.5	6.1 <b>H</b>	96.0	1.15	11.6	6.9 <b>H</b>	12	AL
ND66JF	102.6 <b>X</b>	101.1 <b>*</b>	97.7	97.8	99.8	1.95 <b>*</b>	7.0	2.4	97.8	1.73	6.9	2.4	12	AH
P9LCXF_AL	95.1	96.1	98.4	99.2	97.2	1.22	6.4	1.9	96.8	1.41	6.3	2.3	12	AK
QQ28L8	86.3 <b>*</b>	86.1 <b>L</b>	84.1 <b>*L</b>	85.3 <b>L</b>	85.4	-2.09 <b>*</b>	3.8	1.0	87.8	-1.61	3.8	2.3	12	LA
RFUPQV	92.5	94.6	95.8	94.7	94.4	0.43	5.6	1.4	91.2	-0.48	6.7	2.7	12	LB
RWKWL8	92.9	93.8	97.9	95.4	95.0	0.60	7.7	2.2	93.0	0.14	8.0	2.4	12	LA
UHFD2L_AL	99.7 <b>*</b>	93.2	97.1	95.5	96.4	0.98	9.1	2.7	94.5	0.63	8.9	4.5	12	AK
UZXC7J	99.4 <b>*</b>	109.3 <b>X</b>	100.8 <b>*</b>	97.5 <b>H</b>	101.8	2.50 <b>*</b>	11.1	5.2	97.1	1.51	8.8	6.1	12	AC
VAX4B4_AL	95.4	91.5	88.1	92.3	91.8	-0.29	7.2	3.0	90.8	-0.63	8.1	3.1	12	AL
WABBQ7	91.2	92.7	92.2	92.0	92.0	-0.24	5.8	0.6	91.4	-0.41	5.9	0.8 <b>L</b>	12	AH
WF2PDR	95.5	<b>No DATA</b>	95.8	101.0 <b>*</b>	97.4	1.28	9.2	3.1	97.8	1.75	9.4	2.9	11	TB
WQKY47	91.4	95.6	93.3	97.7	94.5	0.46	8.8	2.7	94.8	0.73	9.2	2.4	8	LC
WQKY47_AL	91.5	95.7	92.4	97.7	94.3	0.40	7.7	2.9	95.4	0.95	7.6	2.3	8	XX
XUY2LV	99.0 <b>*</b>	93.9	92.2	92.6	94.4	0.44	7.2	3.1	95.9	1.11	8.2	2.8	12	TB
XXVKNU_AI	92.8	92.4	91.8	89.4	91.6	-0.36	5.2	1.5	90.8	-0.62	6.4	2.3	12	XX
Y2AHTV	93.7	91.1	98.2	94.6	94.4	0.43	6.1	2.9	92.8	0.06	7.9	2.6	12	LA
YHGYFN	89.1	92.8	92.6	96.0	92.6	-0.07	5.6	2.8	91.8	-0.29	5.3	2.1	12	LA
YQACEN_AL	93.8	92.6	90.6	88.1	91.3	-0.45	7.7	2.5	94.1	0.48	7.6	2.8	12	AL
Z288E6	94.0 <b>H</b>	97.0	95.0	96.5	95.6	0.77	9.6	1.4	93.8	0.41	9.2	3.0	12	XX
ZTEYRR	91.0	93.9	94.2	83.9	90.8	-0.60	7.0	4.8	92.6	-0.02	7.6	3.8	12	LC

Consensus (All Labs) Results														
Wk Mean	92.84	92.51	92.60	92.09	Month Mean	92.87			Grand Mean	92.61				
Avg SDr	7.77	7.56	7.66	7.66	Avg SD	7.91			Avg SD	7.95				
SD btwn Labs	3.19	3.81	4.00	4.44	SD btwn Labs	3.55			SD btwn Labs	2.98				
Labs Inclcd	53	54	55	57	SD btwn Wks	2.86			SD btwn Wks	3.29				
Labs Exclcd	5	3	2	1	Labs Inclcd	56			Labs Inclcd	56				
Labs not Rcvd	0	1	1	0										



Containerboard Interlaboratory Testing Program  
Analysis 207  
**Bursting Strength (Mullen), 35 lb Linerboard - 35E2**  
TAPPI Official Test Method T807

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

<b>AC</b>	Perkins Model C	<b>AH</b>	Perkins Model AH
<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>AX</b>	Perkins Mullen Tester (model not specified)	<b>LA</b>	L&W Bursting Strength Tester
<b>LB</b>	L&W Burst-O-Matic	<b>LC</b>	L&W Autoline (207 Enrollment)
<b>LJ</b>	L&W Bursting Strength Tester J-Type	<b>LZ</b>	L&W (model not specified)
<b>TB</b>	TMI Monitor/Burst 1000	<b>TP</b>	Technidyne PROFILE/Plus
<b>XX</b>	Instrument make/model not specified by lab		



**Containerboard Interlaboratory Testing Program**  
 Analysis 215  
**Ring Crush, 42 lb Linerboard - 42F4**  
 TAPPI Official Test Method T822

**Report #623 (J)**  
**August 2021**

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	
2AGXD2	95.2	97.8 *	94.7	96.1	96.0	2.13 *	2.2	1.3	96.0	2.13 *	2.2	1.3	4	TU
2GENYC	89.2 L	90.5	90.1	89.4 L	89.8	-0.29	1.5	0.6	89.8	-0.29	1.5	0.6	4	RS
2Y2439	85.7	89.2	82.9 *	86.3 H	86.0	-1.76	3.9	2.6	86.0	-1.76	3.9	2.6	4	LD
34Q97W	86.8	88.5	87.0	89.2	87.9	-1.04	2.5	1.2	87.9	-1.04	2.5	1.2	4	LC
3DBE4Z	90.1 H	92.4 L	89.6	93.7	91.4	0.35	5.3	1.9	91.4	0.35	5.3	1.9	4	LD
3GCHX8	89.2	87.2	85.4	86.3	87.0	-1.37	3.3	1.6	87.0	-1.37	3.3	1.6	4	TH
3H9WKZ	90.2 H	90.1	92.9	92.8	91.5	0.39	4.8	1.6	91.5	0.39	4.8	1.6	4	TJ
4NQQU3	104.1 X	104.9 X	106.4 X	107.3 X	105.7	5.95 X	3.3	1.4	105.7	5.95 X	3.3	1.4	4	LD
4XFCZ2	94.3	90.2	83.7 *H	90.5	89.7	-0.33	5.8	4.4	89.7	-0.33	5.8	4.4	4	LD
6AQ7UQ	86.7	89.4	86.7	88.2	87.8	-1.09	2.6	1.3	87.8	-1.09	2.6	1.3	4	LD
6MCGL3	89.8	90.5	90.9	89.2	90.1	-0.17	4.0	0.8	90.1	-0.17	4.0	0.8	4	LD
7QRG2U	88.7	91.8	91.7	90.5	90.7	0.06	3.3	1.4	90.7	0.06	3.3	1.4	4	LC
8L6BRX	92.2	88.8	93.2	89.8	91.0	0.18	3.0	2.0	91.0	0.18	3.0	2.0	4	LD
8LUAB6	88.7	87.3	90.9	89.2	89.0	-0.59	3.1	1.5	89.0	-0.59	3.1	1.5	4	LZ
8UML7Y	89.8	92.1	91.2	89.4	90.6	0.04	2.6	1.2	90.6	0.04	2.6	1.2	4	LD
9BQERZ	89.2	90.4	89.3	90.5	89.8	-0.27	2.9	0.7	89.8	-0.27	2.9	0.7	4	LD
9NT46R	88.6 H	91.0	93.8	88.5 H	90.5	-0.02	5.5	2.5	90.5	-0.02	5.5	2.5	4	LZ
9W7WYW	91.2	95.7	95.0	93.1	93.8	1.27	3.1	2.0	93.8	1.27	3.1	2.0	4	LC
AN8VVN	94.7	95.1	96.3	94.1	95.0	1.77	2.6	0.9	95.0	1.77	2.6	0.9	4	LD
B2CAUZ	89.2	87.2	85.4	86.3	87.0	-1.37	3.3	1.6	87.0	-1.37	3.3	1.6	4	TH
BAK3JL	95.5	98.2 *	93.7	94.6	95.5	1.96 *	3.1	1.9	95.5	1.96 *	3.1	1.9	4	LD
BCC2XK	89.2	89.7	91.3	89.5	89.9	-0.24	2.5	0.9	89.9	-0.24	2.5	0.9	4	EN
BQ8JMH	90.7	90.6	90.1	91.0	90.6	0.03	2.8	0.4 L	90.6	0.03	2.8	0.4 L	4	LD
C69CXR	89.9	91.4	93.4	91.8	91.6	0.43	3.0	1.4	91.6	0.43	3.0	1.4	4	LD
C7K94W	83.7 *	87.6	85.3	88.3	86.2	-1.70	4.0	2.1	86.2	-1.70	4.0	2.1	4	TJ
CZCQ3H	88.0	89.4	89.4	84.2 *	87.8	-1.09	2.5	2.4	87.8	-1.09	2.5	2.4	4	LC
DKEYYT	79.2 X	79.3 X	NO DATA	77.4 X	78.6	-4.67 X	5.0	1.1	78.6	-4.67 X	5.0	1.1	3	LD
EE8RVA	90.4	97.9 *	68.1 XH	96.2	88.1	-0.94	7.0	13.7 H	88.1	-0.94	7.0	13.7 H	4	TU
F39FXM	91.4	91.1	91.1	91.5	91.3	0.30	2.6	0.2 L	91.3	0.30	2.6	0.2 L	4	LD
FH4XQR	88.4	91.9	91.5	93.1	91.2	0.28	3.3	2.0	91.2	0.28	3.3	2.0	4	MB
GA4V3K	68.9 XH	70.8 XH	92.1	90.3	80.5	-3.93 X	6.0	12.4 H	80.5	-3.93 X	6.0	12.4 H	4	LD
GC8QLN	85.9	84.4 *	88.3	93.3	88.0	-1.01	4.3	3.9	88.0	-1.01	4.3	3.9	4	TH
GHLNC	92.3	92.7	91.3	88.8	91.3	0.29	3.5	1.7	91.3	0.29	3.5	1.7	4	LD
H4WTCB	64.3 XH	71.2 XH	66.4 XH	83.4 *	71.3	-7.54 X	7.7	8.6 H	71.3	-7.54 X	7.7	8.6 H	4	LC
KAVWFE	96.2 *	92.6	93.0	94.1	93.9	1.34	4.1	1.6	93.9	1.34	4.1	1.6	4	EX





**Containerboard Interlaboratory Testing Program**  
 Analysis 215  
**Ring Crush, 42 lb Linerboard - 42F4**  
 TAPPI Official Test Method T822

**Report #623 (J)**  
**August 2021**

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	
MPZ3H9	90.5	91.0	91.6	91.8	91.2	0.28	3.3	0.6	91.2	0.28	3.3	0.6	4	LD
MQB69E	90.1	90.4	90.2	90.5	90.3	-0.09	2.5	0.2 L	90.3	-0.09	2.5	0.2 L	4	LC
ND66JF	93.2	90.9	89.1	90.5	90.9	0.16	2.5	1.7	90.9	0.16	2.5	1.7	4	LG
P9LCXF	93.3	92.9	87.7	88.4	90.6	0.02	2.2	2.9	90.6	0.02	2.2	2.9	4	LD
QQ28L8	92.5	92.0	93.7 L	94.5	93.2	1.03	1.7	1.1	93.2	1.03	1.7	1.1	4	LZ
RFUPQV	90.1	91.8	91.6	93.2	91.6	0.44	2.6	1.3	91.6	0.44	2.6	1.3	4	LC
THYW9E	86.2	87.0 L	87.8	85.0	86.5	-1.59	2.0	1.2	86.5	-1.59	2.0	1.2	4	EM
VAX4B4	89.0	88.4	89.2	88.4	88.8	-0.70	3.3	0.4 L	88.8	-0.70	3.3	0.4 L	4	LD
VJPJY9	93.7	98.0 *	98.2 *	96.7	96.6	2.39 *	2.7	2.1	96.6	2.39 *	2.7	2.1	4	TH
WF2PDR	101.2 X	94.0	100.4 X	98.6 *	98.6	3.15 X	3.1	3.2	98.6	3.15 X	3.1	3.2	4	LX
WQKY47	85.0	88.2	83.3 *	90.0	86.6	-1.53	2.8	3.0	86.6	-1.53	2.8	3.0	4	LD
XQXV66	92.1	92.0	92.1	92.1	92.1	0.61	1.8	0.0 L	92.1	0.61	1.8	0.0 L	4	MB
XUY2LV	94.3	89.1	89.2	94.6	91.8	0.50	3.9	3.1	91.8	0.50	3.9	3.1	4	LD
Y2AHTV	90.5 H	91.8	92.9	92.1	91.8	0.51	4.5	1.0	91.8	0.51	4.5	1.0	4	LZ
YHGYFN	89.2	88.3	89.6 L	87.6	88.7	-0.73	2.2	0.9	88.7	-0.73	2.2	0.9	4	LD
YQACEN	93.5 H	91.3 H	90.9 H	91.0 H	91.7	0.45	7.1	1.2	91.7	0.45	7.1	1.2	4	LC
ZPHBD7	76.5 X	75.0 X	78.2 X	77.9 X	76.9	-5.35 X	2.1	1.5	76.9	-5.35 X	2.1	1.5	4	EM
ZTEYRR	89.7	94.7	93.1	91.8	92.3	0.70	3.6	2.1	92.3	0.70	3.6	2.1	4	LD

Consensus (All Labs) Results														
Wk Mean	90.30	91.13	90.45	90.81	Month Mean	90.53			Grand Mean	90.53				
Avg SDr	3.80	3.27	3.30	3.27	Avg SD	3.55			Avg SD	3.55				
SD btwn Labs	2.86	3.04	3.31	3.23	SD btwn Labs	2.55			SD btwn Labs	2.55				
Labs Incl	47	48	47	50	SD btwn Wks	2.70			SD btwn Wks	2.70				
Labs Excl	6	5	5	3	Labs Incl	47			Labs Incl	47				
Labs not Rcvd	0	0	1	0										

**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	RS	Regmed Digital Crush Tester CT-2000
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)		



**Containerboard Interlaboratory Testing Program**  
 Analysis 217  
**Ring Crush, 35 lb Linerboard - 35E2**  
 TAPPI Official Test Method T822

**Report #623 (J)**  
**August 2021**

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	
2AGXD2	80.0 L	80.9	81.0	82.2	81.0	0.07	2.3	0.9	79.9	-0.38	3.2	2.0	12	TU
2GENYC	78.9 L	79.5 L	79.3 L	79.3 L	79.2	-0.56	1.2	0.2 L	79.2	-0.61	1.2	0.2 L	12	RS
2Y2439	78.8	81.6	83.4	82.2	81.5	0.23	4.1	1.9	80.4	-0.20	3.9	2.9	12	LD
34Q97W	80.9	81.7	83.4	81.2	81.8	0.33	3.6	1.1	78.5	-0.86	3.9	3.6	12	LC
3DBE4Z	83.7	81.9	83.9	82.4	83.0	0.73	2.9	1.0	82.6	0.55	3.4	1.7	12	LD
3GCHX8	77.3	76.3	75.1	73.5 *	75.6	-1.82	3.3	1.6	77.3	-1.25	3.7	2.2	12	TH
3H9WKZ	80.7	79.8	80.8	82.7	81.0	0.06	4.5	1.2	80.2	-0.28	4.3	1.5	12	TJ
4NQQU3	91.5 X	90.0 *	88.6 *	89.7 *	90.0	3.15 X	4.1	1.2	90.0	3.04 X	4.6	1.8	12	LD
4XFCZ2	80.2	81.6	79.3	81.3	80.6	-0.09	4.0	1.0	75.3	-1.95 *	7.4	6.6 H	12	LC
6A7UQ	78.4 L	79.1	78.5	78.6	78.7	-0.75	2.8	0.3 L	78.9	-0.71	2.7	0.8	12	LD
6MCGL3	79.3	75.1	78.4	77.3	77.5	-1.15	3.5	1.8	77.5	-1.18	3.5	1.8	4	LD
7QRG2U	79.8	81.5	83.6	80.0	81.2	0.14	3.3	1.8	79.0	-0.67	3.6	2.5	12	LC
8L6BRX	75.6	76.5	82.1	82.4	79.1	-0.58	4.4	3.6	80.0	-0.32	4.0	3.7	12	LD
8LUAB6	80.8	80.5	77.6	79.2	79.5	-0.45	3.5	1.4	80.7	-0.11	3.6	1.7	8	LZ
8UML7Y	84.3	82.6	82.4	81.2	82.6	0.61	4.1	1.3	82.3	0.45	3.6	1.3	12	LD
9BQERZ	77.7	79.3	79.1	81.0	79.3	-0.54	3.1	1.3	79.3	-0.57	3.3	2.0	12	LD
9NT46R	80.9	83.6	83.0	80.5	82.0	0.40	3.2	1.5	82.3	0.45	3.5	2.2	12	LZ
9W7WYW	85.2	84.2	83.1	84.0	84.1	1.13	3.2	0.8	84.3	1.12	3.3	0.8	12	LC
AN8VVN	83.8 L	84.3	87.2	85.0	85.1	1.46	2.4	1.5	85.2	1.43	2.6	1.4	12	LD
B2CAUZ	77.3	76.3	75.1	73.5 *	75.6	-1.82	3.3	1.6	76.4	-1.58	3.6	1.7	8	XX
BAK3JL	82.6	86.7	89.2 *	85.4	86.0	1.77	3.4	2.8	86.0	1.68	3.4	2.8	4	LD
BCC2XK	79.7	83.3	80.8	79.6	80.9	0.01	3.2	1.7	81.2	0.07	3.6	2.3	12	EN
BQ8JMH	79.2	79.6	80.6	82.5	80.5	-0.12	3.9	1.5	80.4	-0.19	3.7	1.2	12	LD
C69CXR	84.4	84.7	83.3	82.9	83.8	1.03	3.0	0.8	84.3	1.12	3.3	1.0	12	LD
C7K94W	72.3 *	73.8	69.3 X	78.2	73.4	-2.57 *	3.9	3.7	75.9	-1.72	4.2	4.3	12	LZ
CZCQ3H	75.5	78.1	82.1	73.3 *	77.3	-1.23	3.4	3.8	77.7	-1.10	3.5	2.5	10	LC
DKEYYT	72.4 *	70.8 *	NO DATA	65.4 X	69.5	-3.90 X	3.3	3.7	70.1	-3.69 X	4.6	3.0	11	LD
EE8RVA	82.6	86.3	62.2 XH	81.4	78.1	-0.93	6.9	10.8 H	78.4	-0.88	9.7	7.1 H	10	TU
F39FXM	81.9	81.9	81.7 L	81.6	81.8	0.32	2.0	0.1 L	82.0	0.35	2.2	0.3 L	8	LD
FH4XQR	84.5	79.8	82.9	82.2	82.4	0.53	3.5	1.9	84.3	1.11	3.9	3.5	12	MB
GA4V3K	76.8 H	71.0 *H	79.6	77.4	76.2	-1.60	6.2	3.6	78.7	-0.77	5.1	3.7	8	LD
GC8QLN	81.3	78.6	75.4 H	83.0	79.6	-0.43	5.2	3.3	79.9	-0.37	4.5	4.6	12	TH
GHLNC	79.8	81.4	80.9	77.8	80.0	-0.30	3.4	1.6	78.0	-1.03	3.3	1.9	12	LD
H4WTCB	61.9 XH	66.5 XH	66.0 XH	66.6 XH	65.3	-5.37 X	7.3	2.2	66.2	-5.01 X	7.8	5.2	12	LC
KAVWFE	83.5	85.4	85.1	85.7	84.9	1.42	2.8	1.0	86.6	1.89	4.6	2.4	12	EX



**Containerboard Interlaboratory Testing Program**  
 Analysis 217  
**Ring Crush, 35 lb Linerboard - 35E2**  
 TAPPI Official Test Method T822

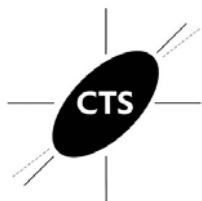
**Report #623 (J)**  
**August 2021**

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
MPZ3H9	81.8	82.2	78.9	79.5	80.6	-0.09	2.9	1.6	81.6	0.21	3.1	1.6	12	LD
MQB69E	78.9	79.3	79.1	78.9	79.0	-0.62	2.8	0.2 L	79.9	-0.38	3.3	1.2	12	LC
ND66JF	84.9	84.4	84.8	85.1	84.8	1.37	3.0	0.3 L	83.9	0.99	2.9	1.5	12	LG
P9LCXF	83.9	84.9	80.7	77.0	81.6	0.28	3.1	3.6	82.6	0.55	3.1	2.1	12	LD
QQ28L8	82.3	84.4	83.0	83.2	83.2	0.83	3.6	0.9	82.7	0.58	3.5	0.6 L	12	LZ
RFUPQV	84.1	84.9	85.4	87.0	85.3	1.55	3.3	1.2	84.9	1.33	3.4	1.1	12	LC
THYW9E	80.3 L	79.4 L	81.0	78.0	79.7	-0.39	1.7	1.3	80.3	-0.24	2.4	1.4	12	EM
VAX4B4	79.6	81.8	79.1 L	78.3	79.7	-0.40	3.1	1.5	79.4	-0.53	3.1	0.9	12	LD
VJPJY9	83.4	84.8	82.8	81.2	83.1	0.77	3.6	1.5	82.7	0.56	3.5	1.3	12	TH
WF2PDR	83.4	78.8	87.9	87.1	84.3	1.20	3.1	4.2	84.7	1.27	4.1	4.6	12	LX
WQKY47	77.0	76.5	74.6 *	78.4	76.6	-1.45	2.8	1.6	75.9	-1.72	2.6	2.2	8	LD
XQXV66	81.9	83.0 L	79.7	85.0 L	82.4	0.54	1.6	2.2	83.3	0.77	1.4	1.4	12	MB
XUY2LV	84.9 H	75.7 H	76.5 H	77.4	78.6	-0.76	6.4	4.2	80.4	-0.22	6.2	4.4	12	LC
Y2AHTV	80.2	81.5	84.8	86.4	83.2	0.83	3.2	2.9	84.4	1.14	3.3	1.9	12	LZ
YHGYFN	78.5	77.8	77.3	76.3	77.5	-1.16	2.7	0.9	78.7	-0.78	2.7	1.4	12	LD
YQACEN	83.8	84.1	85.5	83.8	84.3	1.20	4.7	0.8	86.8	1.97 *	5.2	2.0	12	LC
ZPHBD7	71.6 *	66.4 X	69.1 X	69.7 X	69.2	-4.01 X	3.8	2.2	68.7	-4.17 X	4.4	1.9	12	EM
ZTEYRR	81.0 H	82.4	83.3	88.4 *H	83.8	1.02	4.7	3.2	83.9	0.99	4.3	2.2	12	LD

Consensus (All Labs) Results														
Wk Mean	80.42	80.85	81.47	81.19	Month Mean	80.83			Grand Mean	81.00				
Avg SDr	3.82	3.64	3.35	3.32	Avg SD	3.63			Avg SD	3.93				
SD btwn Labs	3.31	3.88	3.49	3.71	SD btwn Labs	2.90			SD btwn Labs	2.95				
Labs Incl	51	51	48	50	SD btwn Wks	2.56			SD btwn Wks	2.66				
Labs Excl	2	2	4	3	Labs Incl	49			Labs Incl	49				
Labs not Rcvd	0	0	1	0										

**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	RS	Regmed Digital Crush Tester CT-2000
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 #623 (J)

August 2021

STFI, 42 lb Linerboard - 42F4

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	
2BUQ94_AL	23.9	23.2	23.5	23.2	23.5	-0.15	1.5	0.3	23.5	-0.15	1.5	0.3	4	AL
2MHUCT_AL	23.5	23.3	24.0	22.3	23.3	-0.34	1.9	0.7	23.3	-0.34	1.9	0.7	4	AL
2Y2439	23.8 L	24.0 L	24.5 L	24.2	24.1	0.42	1.0	0.3	24.1	0.42	1.0	0.3	4	LH
34Q97W	21.9	26.6 *	25.3	24.6	24.6	0.84	1.8	2.0 H	24.6	0.84	1.8	2.0 H	4	LU
3DBE4Z	23.2	23.2	22.8	24.1	23.3	-0.27	1.9	0.5	23.3	-0.27	1.9	0.5	4	LA
3GCHX8	20.5 *	21.6 H	21.9	22.5	21.6	-1.74	2.0	0.8	21.6	-1.74	2.0	0.8	4	LH
3H9WKZ	23.0	24.0	23.7	23.7	23.6	-0.05	1.2	0.4	23.6	-0.05	1.2	0.4	4	TT
4UF7KV	24.4 H	23.7	22.6 H	24.4 H	23.8	0.12	2.4	0.9	23.8	0.12	2.4	0.9	4	LU
62BPZV	22.7	23.2	22.0	22.3	22.5	-0.97	1.6	0.5	22.5	-0.97	1.6	0.5	4	LH
62BPZV_AL	22.7	23.2	24.4	22.6	23.2	-0.37	1.7	0.9	23.2	-0.37	1.7	0.9	4	AL
6AQ7UQ	22.1	22.7	22.4	22.2	22.3	-1.12	1.6	0.3	22.3	-1.12	1.6	0.3	4	LU
6MCGL3	36.3 X	36.8 X	37.2 X	36.5 X	36.7	11.29 X	1.8	0.4	36.7	11.29 X	1.8	0.4	4	XX
6QPGF9	26.2 *	23.1	23.3	24.8	24.4	0.62	1.9	1.4	24.4	0.62	1.9	1.4	4	LH
7QRG2U	24.8	25.3	25.0	25.4	25.1	1.28	1.5	0.3	25.1	1.28	1.5	0.3	4	LA
7U74P8	21.8	21.3	22.5	20.3 *	21.5	-1.86	1.6	0.9	21.5	-1.86	1.6	0.9	4	TT
8L6BRX	24.5	25.1	25.0	24.3	24.7	0.93	2.0	0.4	24.7	0.93	2.0	0.4	4	LH
8L8ZWU	25.3	27.0 *	No DATA	No DATA	26.2	2.19 *	2.2	1.2	26.2	2.19 *	2.2	1.2	2	XX
8LUAB6	22.4	22.8	24.3 H	24.5	23.5	-0.09	1.9	1.0	23.5	-0.09	1.9	1.0	4	LA
8UML7Y	23.7	23.7	23.3	23.8	23.6	0.00	1.7	0.2	23.6	0.00	1.7	0.2	4	LY
9BNNJW	27.5 X	25.0	26.5 *	27.2 *H	26.6	2.53 *	2.3	1.1	26.6	2.53 *	2.3	1.1	4	LH
9BQERZ	22.5	23.1	22.5	22.9	22.7	-0.78	1.6	0.3	22.7	-0.78	1.6	0.3	4	LZ
9NT46R_AL	22.4	24.3	23.2	22.3	23.0	-0.52	1.4	0.9	23.0	-0.52	1.4	0.9	4	AL
9W7WYW	22.7	22.0	23.2	22.9	22.7	-0.81	1.7	0.5	22.7	-0.81	1.7	0.5	4	LU
B2CAUZ	20.5 *	21.6 H	21.9	22.5	21.6	-1.74	2.0	0.8	21.6	-1.74	2.0	0.8	4	LH
BAK3JL	43.5 XL	43.5 XL	44.4 XL	44.6 XL	44.0	17.60 X	0.0	0.6	44.0	17.60 X	0.0	0.6	4	LH
BCC2XK	22.5	22.5	21.3	21.1	21.8	-1.55	1.6	0.8	21.8	-1.55	1.6	0.8	4	LY
BMW9WA	23.3	23.5	23.0	23.5	23.3	-0.27	1.5	0.2	23.3	-0.27	1.5	0.2	4	LU
BQ8JMH_AL	23.2	23.5	21.9	23.9 L	23.1	-0.45	1.9	0.9	23.1	-0.45	1.9	0.9	4	AL
C7K94W	23.9	26.6 *	26.0 L	25.2	25.4	1.54	1.8	1.2	25.4	1.54	1.8	1.2	4	LZ
CZCQ3H	25.4	24.6	25.4	22.3	24.4	0.69	1.9	1.5	24.4	0.69	1.9	1.5	4	LY
EE8RVA	24.5	24.3	24.9	21.3 L	23.8	0.10	1.8	1.7 H	23.8	0.10	1.8	1.7 H	4	LA
FH4XQR	21.6 L	24.0	22.7	23.6	23.0	-0.58	1.4	1.1	23.0	-0.58	1.4	1.1	4	LA
GA4V3K	23.4	23.0	22.9	23.0	23.1	-0.48	1.5	0.2	23.1	-0.48	1.5	0.2	4	LA
GA4V3K_AL	22.7	22.8	23.5	22.9	23.0	-0.57	1.5	0.4	23.0	-0.57	1.5	0.4	4	AL
GC8QLN	40.8 XH	41.0 X	41.2 XH	39.4 XH	40.6	14.63 X	3.1	0.8	40.6	14.63 X	3.1	0.8	4	TT



Containerboard Interlaboratory Testing Program  
Analysis 223

Report #623 (J)  
August 2021

STFI, 42 lb Linerboard - 42F4  
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
GHLNC_AL	23.5	23.9	23.9	23.1	23.6	-0.03	1.5	0.4	23.6	-0.03	1.5	0.4	4	AK
H4WTCB_AL	25.5	21.9 L	22.8 L	22.5 L	23.2	-0.39	1.1	1.6	23.2	-0.39	1.1	1.6	4	AL
KAVWFE	32.0 XL	32.0 XL	27.3 *L	29.9 XL	30.3	5.76 X	0.0	2.3 H	30.3	5.76 X	0.0	2.3 H	4	TT
LNN7FP	24.7	25.1	24.4	26.4 *	25.2	1.31	1.7	0.9	25.2	1.31	1.7	0.9	4	LH
ND66JF	22.8	22.9	22.6	22.3	22.6	-0.86	1.5	0.3	22.6	-0.86	1.5	0.3	4	LU
P9LCXF_AL	23.6	23.3	22.8	22.1	23.0	-0.60	1.6	0.7	23.0	-0.60	1.6	0.7	4	AK
RFUPQV	23.1	22.6	23.1	22.2	22.7	-0.79	1.5	0.4	22.7	-0.79	1.5	0.4	4	LW
RWKWL8	23.3	23.7	24.1	23.7	23.7	0.04	1.3	0.4	23.7	0.04	1.3	0.4	4	LY
TQAYUE	24.6	26.0	26.3	27.0 *	25.9	1.99 *	1.6	1.0	25.9	1.99 *	1.6	1.0	4	LH
UHFD2L_AL	25.2	24.2 H	24.4	24.6	24.6	0.84	2.2	0.4	24.6	0.84	2.2	0.4	4	AK
UZXC7J	22.6	22.9	22.7	22.5	22.7	-0.83	1.7	0.2	22.7	-0.83	1.7	0.2	4	LH
VAX4B4_AL	22.8	23.0	23.3	24.2	23.3	-0.27	1.7	0.6	23.3	-0.27	1.7	0.6	4	AL
VMPVV9	25.2 L	23.6	23.4 H	23.9	24.0	0.32	1.8	0.8	24.0	0.32	1.8	0.8	4	XX
WABBQ7	23.9	23.5	23.7	23.9	23.8	0.12	1.3	0.2	23.8	0.12	1.3	0.2	4	TT
WQKY47	13.2 X	17.5 X	19.5 X	18.8 X	17.3	-5.50 X	1.9	2.8 H	17.3	-5.50 X	1.9	2.8 H	4	LZ
WQKY47_AL	37.5 XL	38.6 XL	36.1 XL	36.4 XL	37.1	11.68 X	0.0	1.1	37.1	11.68 X	0.0	1.1	4	AL
XUY2LV	23.9	24.2 H	23.9	23.9	24.0	0.30	2.2	0.2	24.0	0.30	2.2	0.2	4	LW
XXVGNU_AI	24.2	26.0	25.7	23.8	24.9	1.11	2.0	1.1	24.9	1.11	2.0	1.1	4	XX
Y2AHTV	21.2	21.8	22.0	23.1 H	22.0	-1.42	1.9	0.8	22.0	-1.42	1.9	0.8	4	LW
YHGYFN	23.0 L	23.0 L	22.9 L	23.5	23.1	-0.44	1.0	0.3	23.1	-0.44	1.0	0.3	4	BK
YQACEN_AL	24.2	24.9	25.1 L	24.9 L	24.8	0.98	1.3	0.4	24.8	0.98	1.3	0.4	4	AL
Z4B6J6	24.9 H	24.9	25.6	25.4	25.2	1.32	2.1	0.4	25.2	1.32	2.1	0.4	4	LA
ZTEYRR	25.2	23.6	24.1	25.3	24.5	0.77	1.7	0.8	24.5	0.77	1.7	0.8	4	LA

Consensus (All Labs) Results													
Wk Mean	23.46	23.71	23.72	23.57	Month Mean	23.64			Grand Mean	23.64			
Avg SDr	1.73	1.75	1.67	1.72	Avg SD	1.72			Avg SD	1.72			
SD btwn Labs	1.27	1.31	1.34	1.41	SD btwn Labs	1.16			SD btwn Labs	1.16			
Labs Incl	51	52	52	51	SD btwn Wks	0.82			SD btwn Wks	0.82			
Labs Excl	7	6	5	6	Labs Incl	52			Labs Incl	52			
Labs not Rcvd	0	0	1	1									



Containerboard Interlaboratory Testing Program  
Analysis 223  
**STFI, 42 lb Linerboard - 42F4**  
TAPPI Official Test Method T826

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>BK</b>	Buchel Strip Compression Tester BK-155	<b>LA</b>	L&W Autoline (223 Enrollment)
<b>LH</b>	L&W 282	<b>LU</b>	L&W 52 without moisture correction(was 53)
<b>LW</b>	L&W 53 with moisture correction (was 53M)	<b>LY</b>	L&W 152 without moisture correction
<b>LZ</b>	L&W (model not specified)	<b>TT</b>	TMI Short Span Compression, 17-34 (MB K455)
<b>XX</b>	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program

Analysis 225

Report #623 (J)

August 2021

STFI, 35 lb Linerboard - 35E2

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	
2BUQ94_AL	24.3	23.1	23.1	23.3	23.4	0.48	1.5	0.6	23.6	0.60	1.6	0.4	12	AL
2MHUCT_AL	22.4	22.5	21.9	22.5 L	22.3	-0.70	1.2	0.3	22.3	-0.81	1.5	0.4	12	XX
2Y2439	24.2 L	23.6 L	23.7 L	24.9 L	24.1	1.21	0.7	0.6	24.0	1.05	1.3	0.4	12	LH
34Q97W	23.7	26.4 X	24.2	24.5	24.7	1.87	1.8	1.2	24.1	1.14	1.9	1.0	12	LU
3DBE4Z	22.1	22.3	22.5	22.9	22.4	-0.59	1.8	0.3	22.2	-0.87	1.8	0.5	12	LA
3GCHX8	22.1	22.5	22.8	22.9 L	22.6	-0.43	1.6	0.4	22.1	-1.00	1.8	0.7	12	LH
3H9WKZ	22.8	22.4	22.5	23.2	22.7	-0.28	1.3	0.4	22.7	-0.35	1.4	0.4	12	TT
4UF7KV	25.0 *	24.7	23.8	23.0	24.1	1.24	1.5	0.9	23.8	0.86	1.9	1.0	12	LU
62BPZV	23.2	23.1	22.0	22.7	22.8	-0.22	1.7	0.6	22.9	-0.18	1.8	0.5	12	LH
62BPZV_AL	23.2	23.1	23.7	22.5 H	23.1	0.18	1.9	0.5	23.8	0.87	1.7	1.3	12	AL
6AQ7UQ	21.5	20.4 *	21.5	21.4 H	21.2	-1.89	2.0	0.5	21.8	-1.37	2.0	0.6	12	LU
6MCGL3	30.8 X	30.9 XL	31.3 X	31.8 X	31.2	8.86 X	1.7	0.5	31.2	8.81 X	1.7	0.5	4	XX
6QPGF9	23.4	22.8	22.6	22.7	22.9	-0.10	1.8	0.4	23.4	0.45	2.0	1.3	12	LH
7QRG2U	23.9 L	23.7	23.1	23.5 L	23.6	0.62	1.2	0.3	23.4	0.35	1.3	0.6	12	LA
7U74P8	20.6 *	21.3	21.5	21.2	21.2	-1.96 *	1.4	0.4	22.2	-0.92	1.6	2.1 H	12	TT
8L6BRX	22.8	24.8	25.4	18.4 XH	22.9	-0.11	1.8	3.2 H	23.9	0.90	1.8	1.9 H	12	LH
8L8ZWU	24.1	23.4	No DATA	No DATA	23.7	0.83	1.6	0.5	22.7	-0.34	1.6	0.7	10	XX
8LUAB6	20.6 *H	21.4	23.6 L	24.5 H	22.5	-0.46	2.1	1.8 H	23.0	-0.04	1.9	1.4	8	LA
8UML7Y	22.7	22.1	23.5	22.5	22.7	-0.32	1.7	0.6	23.1	0.06	1.6	1.0	12	LY
9BNNJW	26.7 X	27.0 X	26.2 *	25.7 *	26.4	3.71 X	1.8	0.6	26.6	3.90 X	2.0	0.5	12	LH
9BQERZ	22.9	22.1	22.8	22.5	22.6	-0.44	1.6	0.3	22.3	-0.82	1.7	0.5	12	LZ
9NT46R_AL	21.2	23.5	24.4	24.3	23.3	0.39	1.5	1.5	22.7	-0.39	1.4	1.2	12	XX
9W7WYW	22.5	22.4	22.7	22.8	22.6	-0.42	1.7	0.2	22.4	-0.64	1.6	0.4	12	LU
B2CAUZ	22.1	22.5	22.8	22.9 L	22.6	-0.43	1.6	0.4	22.0	-1.08	1.8	1.2	8	LH
BAK3JL	37.3 XL	38.6 XL	38.1 XL	37.0 XL	37.7	15.90 X	0.0	0.7	38.1	16.23 X	0.0	0.7	8	LH
BCC2XK	21.4	21.0	21.4	20.4 *	21.0	-2.08 *	1.6	0.4	21.2	-1.93	1.6	0.4	12	LU
BMW9WA	23.6	23.6	23.7	23.6	23.6	0.69	1.5	0.1 L	23.5	0.54	1.7	0.4	12	LU
BQ8JMH_AL	23.6	23.5	22.2	24.5	23.4	0.51	1.8	1.0	23.1	0.06	1.7	0.6	12	AL
C7K94W	23.9	26.0 *	23.4 H	23.1	24.1	1.23	2.3	1.3	24.6	1.75	2.1	1.4	12	LZ
CZCQ3H	23.7	23.0	24.1 H	22.2	23.3	0.31	2.1	0.8	23.3	0.33	2.0	0.6	10	LZ
EE8RVA	23.9	24.4	25.2	21.2	23.7	0.76	2.0	1.7 H	24.5	1.54	2.1	1.2	12	LA
FH4XQR	21.9 L	24.2	21.4	22.5	22.5	-0.51	1.4	1.2	23.7	0.71	1.6	1.4	11	LA
GA4V3K	22.5	23.1	22.5	22.9	22.7	-0.25	1.4	0.3	22.8	-0.26	1.5	0.3	8	LA
GA4V3K_AL	22.3	22.9	22.9	22.5	22.7	-0.34	1.7	0.3	22.7	-0.29	1.8	0.5	8	AL
GC8QLN	32.5 X	33.8 XH	37.2 X	34.9 XH	34.6	12.52 X	2.2	2.0 H	34.0	11.80 X	2.4	1.4	12	TT



**Containerboard Interlaboratory Testing Program**  
 Analysis 225  
**STFI, 35 lb Linerboard - 35E2**  
 TAPPI Official Test Method T826

**Report #623 (J)**  
**August 2021**

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
GHLNC_AL	23.0	22.8	23.2	23.1	23.0	0.05	1.9	0.1 L	22.5	-0.56	1.8	0.5	12	AK
H4WTCB_AL	23.1	22.1 H	21.9	22.4	22.4	-0.65	1.7	0.5	21.5	-1.65	1.2	1.4	12	AL
KAVWFE	27.9 XL	29.9 XL	27.7 XL	27.0 XL	28.1	5.55 X	0.0	1.2	29.3	6.72 X	0.0	1.6	12	TT
LNN7FP	25.1 *	24.1	25.7 *	25.5 *	25.1	2.30 *	1.9	0.7	25.5	2.69 *	1.5	0.6	12	LH
ND66JF	22.8 H	22.3	21.1	21.7	22.0	-1.09	1.8	0.7	21.8	-1.30	1.7	0.6	12	LW
P9LCXF_AL	22.6	23.1	22.6	21.8	22.5	-0.48	1.5	0.5	23.0	-0.07	1.8	0.6	12	AK
RFUPQV	22.1	22.0	22.4 L	22.4	22.3	-0.77	1.5	0.2	22.2	-0.93	1.4	0.3	12	LW
RWKWL8	22.7	23.0	22.4	23.0	22.8	-0.21	1.8	0.3	23.1	0.09	1.6	0.6	12	LU
TQAYUE	24.0	24.3	24.8	25.1	24.5	1.69	1.6	0.5	24.5	1.64	1.6	0.5	4	LH
UHFD2L_AL	23.3	24.9	24.8 H	23.7	24.2	1.33	2.1	0.8	24.4	1.54	2.0	1.1	12	AK
UZXC7J	22.3	21.7	22.2	22.5	22.2	-0.86	1.7	0.3	22.2	-0.87	1.5	0.4	12	LH
VAX4B4_AL	22.8	22.5	22.6	22.9	22.7	-0.28	1.7	0.2	22.7	-0.33	1.8	0.8	12	AL
VMPVV9	21.7	22.7 L	21.6	21.7 L	21.9	-1.11	1.1	0.5	22.5	-0.55	1.4	0.8	12	XX
WABBQ7	22.8	22.8	22.5 L	23.4 L	22.8	-0.13	1.2	0.4	22.8	-0.21	1.3	0.3	12	TT
WQKY47	13.3 X	16.7 X	18.5 X	19.1 X	16.9	-6.54 X	1.5	2.6 H	16.7	-6.81 X	1.6	1.9 H	8	LZ
WQKY47_AL	32.6 XL	32.5 XL	31.3 XL	31.0 XL	31.8	9.54 X	0.0	0.8	32.0	9.67 X	0.0	1.2	8	AL
XUY2LV	23.8	23.3	22.6	22.4	23.0	0.07	2.1	0.6	23.0	-0.01	2.0	0.8	12	LW
XXVKNU_AI	21.9 L	23.5	23.0	25.0	23.3	0.41	1.5	1.3	28.5	5.95 X	1.8	6.6 H	12	XX
Y2AHTV	21.3	21.5	21.4	22.5	21.7	-1.41	1.6	0.6	21.9	-1.20	1.8	0.4	12	LW
YHGYFN	21.6	21.7	21.5 L	21.3	21.5	-1.59	1.1	0.2	21.9	-1.24	1.1	0.5	12	BK
YQACEN_AL	24.0	25.1 L	25.1 L	24.2 L	24.6	1.75	1.0	0.6	24.5	1.55	1.2	0.6	12	AL
Z4B6J6	24.3	23.4	25.5	24.1 H	24.3	1.43	2.1	0.9	23.6	0.67	1.8	1.2	12	LA
ZTEYRR	23.8	22.1	23.2	25.6 *	23.7	0.75	1.3	1.4	23.8	0.81	1.5	1.0	12	LA

Consensus (All Labs) Results														
Wk Mean	22.87	22.97	23.08	23.07	Month Mean	22.97			Grand Mean	23.02				
Avg SDr	1.73	1.58	1.69	1.66	Avg SD	1.67			Avg SD	1.68				
SD btwn Labs	1.06	1.11	1.27	1.21	SD btwn Labs	0.93			SD btwn Labs	0.93				
Labs Incd	51	50	51	50	SD btwn Wks	0.86			SD btwn Wks	0.89				
Labs Excl	7	8	6	7	Labs Incd	51			Labs Incd	50				
Labs not Rcvd	0	0	1	1										





Containerboard Interlaboratory Testing Program  
Analysis 225  
**STFI, 35 lb Linerboard - 35E2**  
TAPPI Official Test Method T826

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>BK</b>	Buchel Strip Compression Tester BK-155	<b>LA</b>	L&W Autoline (223 Enrollment)
<b>LH</b>	L&W 282	<b>LU</b>	L&W 52 without moisture correction (was 53)
<b>LW</b>	L&W 53 with moisture correction (was 53M)	<b>LY</b>	L&W 152 (was 52M)
<b>LZ</b>	L&W (model not specified)	<b>TT</b>	TMI Short Span Compression, 17-34 (MB K455)
<b>XX</b>	Instrument make/model not specified by lab		



**Containerboard Interlaboratory Testing Program**  
 Analysis 228  
**Roughness - Stylus Method, 42 lb Linerboard - 42F4**  
 TAPPI Official Test Method T575

**Report #623 (J)**  
**August 2021**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
2BUQ94_AL	117.5	-1.07	14.01	128.7	-0.64	7.63	4	AL
2MHUCT_AL	115.4	-1.19	14.16	124.0	-0.97	5.84	4	AL
34Q97W	210.2	4.65 X	25.13	156.0	1.32	56.63 H	4	EV
4NQQU3	113.0	-1.34	12.48	116.9	-1.48	3.67	4	EV
4UF7KV	131.5	-0.20	15.09	194.9	4.11 X	69.13 H	4	EV
62BPZV_AL	137.6	0.17	14.98	137.5	-0.01	3.08	4	AL
6AQ7UQ	156.5	1.34	11.89	154.1	1.18	3.91	4	EV
6QPGF9	129.8	-0.30	7.28 L	133.0	-0.33	3.46	4	EV
7QRG2U	110.0	-1.53	7.72 L	115.4	-1.59	3.87	4	EV
8UML7Y	151.1	1.01	14.28	148.9	0.81	5.27	4	EV
9BNNJW	205.7	4.38 X	34.98 H	210.9	5.26 X	19.28	4	LS
9NT46R_AL	119.3	-0.96	9.54	125.2	-0.89	5.05	4	XX
BCC2XK	151.9	1.06	11.06	152.6	1.07	3.25	4	EV
CZCQ3H	132.5	-0.14	12.33	132.9	-0.34	2.85	4	LS
EE8RVA	140.8	0.37	24.81	139.1	0.10	3.74	4	LA
FH4XQR	149.8	0.93	27.02	146.6	0.64	4.95	4	LA
GHLNC	121.0	-0.85	15.91	119.3	-1.31	2.04 L	4	LS
GHLNC_AL	134.2	-0.03	15.07	123.8	-0.99	12.24	4	AK
H4WTCB_AL	164.9	1.86	48.94 H	155.8	1.30	21.74	4	AL
K6XDDF	132.7	-0.13	8.84	132.9	-0.34	5.11	4	LS
P9LCXF	134.2	-0.03	12.66	145.8	0.59	12.13	4	EV
UHFD2L_AL	136.5	0.11	25.03	145.0	0.53	22.96	4	AK
WQKY47	160.2	1.57	11.49	153.7	1.15	9.23	2	LA
WQKY47_AL	161.5	1.65	17.23	153.3	1.12	7.05	4	AL
XUY2LV	116.6	-1.12	10.40	118.3	-1.39	7.43	4	XX
XXVKNU_AL	134.3	-0.03	19.67	129.2	-0.60	7.48	4	XX
Y2AHTV	143.4	0.53	12.90	151.9	1.02	5.90	4	EV
YQACEN_AL	132.7	-0.13	13.60	153.4	1.13	18.29	4	AL
ZTEYRR	110.0	-1.53	10.57	122.4	-1.09	9.19	4	LA

Consensus (All Labs) Results			
Month Mean	134.77	Grand Mean	137.62
Avg SD	17.53	Avg SD Months	14.27
SD btwn Labs	16.20	SD btwn Labs	13.95
Labs Incl	27	Labs Incl	27



Containerboard Interlaboratory Testing Program  
Analysis 228  
**Roughness - Stylus Method, 42 lb Linerboard - 42F**  
TAPPI Official Test Method T575

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>EV</b>	Emveco Microgage Model 210-R	<b>LA</b>	L&W Autoline (228 Enrollment)
<b>LS</b>	L&W 263	<b>XX</b>	Instrument make/model not specified by lab



**Containerboard Interlaboratory Testing Program**  
 Analysis 229  
**Roughness - Sheffield Method, 42 lb Linerboard - 42F4**  
 TAPPI Official Test Method T538

**Report #623 (J)**  
**August 2021**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
2BUQ94_AL	348.1	-1.11	5.90	348.1	-1.11	0.00	1	AL
62BPZV_AL	344.0	-1.54	4.85	344.0	-1.54	0.00	1	AL
9BQERZ	357.6	-0.13	9.40	357.6	-0.13	0.00	1	XX
9W7WYW	356.1	-0.28	7.32	356.1	-0.28	0.00	1	XX
AN8VVN	352.6	-0.64	7.09	352.6	-0.64	0.00	1	PP
BAK3JL	373.2	1.49	8.22	373.2	1.49	0.00	1	LA
BAK3JL_AL	348.5	-1.08	3.77 L	348.5	-1.08	0.00	1	XX
BQ8JMH_AL	359.0	0.02	6.51	359.0	0.02	0.00	1	AL
C69CXR	347.8	-1.14	5.49	347.8	-1.14	0.00	1	PP
GA4V3K_AL	377.7	1.95 *	6.90	377.7	1.95 *	0.00	1	AL
JTRZKV	365.2	0.66	6.98	365.2	0.66	0.00	1	PP
P9LCXF	361.7	0.30	6.95	361.7	0.30	0.00	1	XX
P9LCXF_AL	362.9	0.42	19.64 H	362.9	0.42	0.00	1	AK
UHFD2L_AL	351.1	-0.80	5.61	351.1	-0.80	0.00	1	AK
VAX4B4_AL	370.9	1.25	16.64 H	370.9	1.25	0.00	1	AL
WQKY47_AL	358.2	-0.07	7.47	358.2	-0.07	0.00	1	AL
XXVKNU_AL	121.1	-24.61 X	10.57	121.1	-24.61 X	0.00	1	XX
Z4B6J6	365.7	0.71	4.22	365.7	0.71	0.00	1	XX
ZPHBD7	394.5	3.69 X	6.68	394.5	3.69 X	0.00	1	TS

Consensus (All Labs) Results			
Month Mean	358.84	Grand Mean	358.84
Avg SD	8.80	Avg SD Months	0.00
SD btwn Labs	9.66	SD btwn Labs	9.66
Labs Incl	17	Labs Incl	17

**Key to Instrument Codes Reported by Participants**

AK	L & W Autoline 300	AL	L & W Autoline 400
LA	L & W Autoline (229 Enrollment)	PP	Technidyne Profile/Plus
TS	TMI Monitor/Smoothness	XX	Instrument make/model not specified by lab



**Containerboard Interlaboratory Testing Program**  
 Analysis 231  
**Internal Bond, 42 lb Linerboard - 42F**  
 TAPPI Official Test Method T569

**Report #623 (J)**  
**August 2021**

WebCode	Monthly Results				Cumulative Results					
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst	
34Q97W	84.2	-1.13	5.67		92.2	-0.44	21.46	4	TM	
3DBE4Z	106.6	0.80	9.56		100.4	0.43	4.96	4	HZ	
4NQQU3	95.2	-0.18	2.28		91.1	-0.55	3.06	4	HY	
4UF7KV	75.2	-1.90 *	14.29	H	100.4	0.43	26.67	H	4	TM
6A29GP	251.1	13.24 X	94.65	H	335.2	25.21 X	102.67	H	4	SC
6AQ7UQ	92.6	-0.40	4.45		92.2	-0.44	1.60	L	4	TM
6QPGF9	104.0	0.58	4.18		103.0	0.70	3.33		4	SC
7QRG2U	101.8	0.39	4.55		98.3	0.21	2.89		4	TM
8UML7Y	41.9	-4.76 X	1.70		86.1	-1.07	29.51	H	4	XX
9BNNJW	82.0	-1.31	1.41	L	81.1	-1.61	5.07		4	TM
9NT46R	99.4	0.18	7.37		101.2	0.51	2.21		4	TM
9W7WYW	115.8	1.59	9.34		110.7	1.52	4.38		4	HY
AN8VVN	104.4	0.61	5.73		103.3	0.74	1.06	L	4	HZ
BGKHAU	114.0	1.44	5.57		110.6	1.51	2.95		4	TM
BQ8JMH	98.7	0.12	9.14		96.7	0.04	1.48	L	4	TM
C69CXR	102.0	0.41	5.15		106.3	1.06	3.07		4	HY
EWPQ3T	82.3	-1.29	1.94		87.5	-0.93	4.70		4	TM
GA4V3K	101.6	0.37	3.36		92.3	-0.43	9.04		4	TM
GHHLNC	95.0	-0.20	5.32		89.2	-0.74	4.21		4	TM
H4WTCB	112.4	1.30	6.54		112.9	1.75	21.97	H	4	SC
K6XDDF	105.6	0.72	5.08		102.8	0.68	2.37		4	HY
P9LCXF	87.4	-0.85	5.18		86.1	-1.07	1.14	L	3	TM
RJBERJ	90.0	-0.62	2.47		83.8	-1.32	6.15		4	TM
UHFD2L	83.2	-1.21	6.72		83.7	-1.33	5.08		4	TM
VAX4B4	43.0	-4.67 X	0.94	L	41.5	-5.78 X	1.63	L	4	LZ
YQACEN	115.0	1.53	5.00		108.0	1.24	6.06		4	SC
Z4B6J6	86.2	-0.95	3.03		87.6	-0.92	1.92		4	SC

Consensus (All Labs) Results			
Month Mean	97.28	Grand Mean	96.28
Avg SD	6.23	Avg SD Months	10.74
SD btwn Labs	11.62	SD btwn Labs	9.48
Labs Incd	24	Labs Incd	25



Containerboard Interlaboratory Testing Program  
Analysis 231  
**Internal Bond, 42 lb Linerboard - 42F**  
TAPPI Official Test Method T569

**Report #623 (J)**  
**August 2021**

**Consensus By Method**

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	96.23	11.37	1.05	22
Modified Scott Bond Mechanics	115.80	0.00	18.52	1

**Analysis Notes**

VAX4B4 - Method used is not covered in this test. Data excluded from consensus calculation.

**Key to Instrument Codes Reported by Participants**

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



**Containerboard Interlaboratory Testing Program**  
 Analysis 234  
**COF Inclined Plane (Slide Angle), 42 lb Linerboard - 42F**  
 TAPPI Official Test Method T815

**Report #623 (J)**  
**August 2021**

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SD	Mean	CPV	SD Months	Months
2BUQ94	29.6	0.67	3.70	29.5	0.68	0.36 L	4
2MHUCT	22.8	-1.14	2.59	26.0	-0.57	2.17	4
2Y2439	31.0	1.04	1.41	27.3	-0.09	3.76	4
34Q97W	35.2	2.15 *	4.87	30.5	1.02	3.74	4
3XKCMW	25.6	-0.39	1.82	31.9	1.49	4.22	4
4UF7KV	28.4	0.35	1.67	30.5	1.02	4.66	4
4XFCZ2	34.0	1.83	0.71	32.8	1.82	0.99	4
6AQ7UQ	24.4	-0.71	3.78	27.6	0.01	2.47	4
6QPGF9	31.2	1.09	1.92	29.7	0.73	1.05	4
8UML7Y	20.2	-1.82	2.59	21.6	-2.10 *	2.89	4
9BNNJW	27.8	0.19	2.68	25.9	-0.58	2.47	4
9BQERZ	27.4	0.08	1.95	30.3	0.95	3.25	4
9NT46R	27.6	0.13	4.23	28.3	0.26	1.37	4
9W7WYW	26.7	-0.11	1.96	27.3	-0.09	1.48	4
ADBV7Q	23.6	-0.92	2.61	24.2	-1.18	0.85	4
AN8VVN	27.2	0.03	3.70	25.6	-0.70	1.40	4
BCC2XK	26.2	-0.22	2.38	28.4	0.30	3.80	4
C69CXR	29.4	0.61	3.78	31.4	1.32	1.48	4
CZCQ3H	27.9	0.22	6.32 H	28.5	0.31	0.73	4
FH4XQR	20.1	-1.85	2.66	23.1	-1.56	2.52	4
G3MDTJ	24.0	-0.82	1.41	23.3	-1.50	0.64	3
GA4V3K	24.8	-0.61	1.10	23.9	-1.30	1.91	4
GHLNC	28.0	0.24	0.71	28.0	0.15	0.59	4
H4WTCB	33.5	1.71	3.67	30.7	1.08	2.01	4
P9LCXF	30.0	0.77	2.31	29.5	0.66	0.99	4
UHFD2L	28.6	0.40	4.28	29.1	0.54	1.00	4
VAX4B4	22.5	-1.21	1.46	26.0	-0.56	2.69	4
XUY2LV	27.0	-0.02	3.87	26.8	-0.27	3.31	4
Y2AHTV	21.4	-1.51	3.65	23.9	-1.28	2.83	4
YQACEN	24.8	-0.61	0.84	24.7	-1.00	1.09	4
Z4B6J6	28.6	0.40	0.89	28.8	0.43	0.28 L	4

**Consensus (All Labs) Results**

Month Mean	27.08	Grand Mean	27.57
Avg SD	2.95	Avg SD Months	2.37
SD btwn Labs	3.77	SD btwn Labs	2.87
Labs Incl	31	Labs Incl	31



Containerboard Interlaboratory Testing Program  
Analysis 234  
**COF Inclined Plane (Slide Angle), 42 lb Linerboard - 42F**  
TAPPI Official Test Method T815

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

ZZ Instruments No Longer Tracked





Containerboard Interlaboratory Testing Program  
Analysis 237

Report #623 (J)  
August 2021

Air Resistance, 42 lb Linerboard - 42F4

TAPPI Official Test Method T460

WebCode	Monthly Results				Cumulative Results				
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2BUQ94_AL	21.3	-0.55	2.72		21.1	-1.23	0.30	4	AL
2MHUCT_AL	22.6	0.23	2.02		22.0	-0.41	0.43	4	AL
34Q97W_AL	21.9	-0.17	0.97	L	22.6	0.13	1.28	4	AL
3XKCMW_AI	22.7	0.25	1.70		22.5	0.03	0.21	4	AL
4UF7KV_AL	24.0	1.03	2.22		22.2	-0.22	1.26	4	AL
62BPZV_AL	23.5	0.71	1.20		23.3	0.77	0.22	4	AL
6AQ7UQ	22.3	0.04	3.50		21.7	-0.73	0.65	4	GA
6QPGF9	24.0	1.01	4.21	H	23.0	0.48	0.91	4	TP
8L6BRX	21.2	-0.59	1.62		21.3	-1.05	0.72	4	XX
8UML7Y	22.2	-0.03	1.23		22.4	-0.03	0.80	4	LP
9BNNJW	24.0	0.98	2.95		24.5	1.81	1.41	4	TD
9BQERZ	23.0	0.45	2.53		23.2	0.62	0.96	4	GA
9NT46R_AL	21.5	-0.39	1.31		22.6	0.10	0.80	4	XX
9W7WYW	20.9	-0.73	2.42		21.7	-0.71	0.78	4	TP
A3PLUQ	19.5	-1.57	1.81		19.9	-2.33 *	0.35	4	GA
AN8VVN	23.6	0.78	1.61		22.9	0.35	1.04	2	TP
BAK3JL	17.8	-2.51 *	1.77		17.8	-4.13 X	0.00	1	LA
BAK3JL_AL	22.4	0.07	2.14		22.4	-0.10	0.00	1	AK
BQ8JMH_AL	21.7	-0.29	0.85	L	21.9	-0.54	0.43	4	AL
C69CXR	24.6	1.36	6.54	H	22.7	0.21	1.66	4	TP
CZCQ3H	21.6	-0.37	1.42		21.5	-0.90	0.90	4	XX
DKEYYT	24.3	1.18	2.63		23.8	1.19	1.11	4	GG
EE8RVA	22.2	-0.02	1.58		23.4	0.77	0.85	4	LA
FH4XQR	21.6	-0.35	1.19		21.7	-0.73	0.42	4	LA
GA4V3K	25.1	1.65	1.88		25.2	2.41 *	0.34	4	LA
GA4V3K_AL	25.1	1.63	1.80		24.6	1.84	0.45	4	AL
GHLNC_AL	22.5	0.17	1.67		22.4	-0.11	0.87	4	AK
H4WTCB_AL	22.7	0.28	1.56		23.4	0.77	0.73	4	AL
K6XDDF	22.9	0.35	0.86	L	22.5	0.05	0.50	4	LP
P9LCXF_AL	22.4	0.11	1.75		22.2	-0.28	0.89	4	AK
PM62RB	22.4	0.11	0.84	L	23.1	0.54	0.85	4	LP
QQ28L8	20.6	-0.93	1.35		21.9	-0.56	0.90	4	XX
RQE228	20.6	-0.94	1.56		21.5	-0.89	0.98	4	LP
UHFD2L_AL	22.6	0.22	3.02		22.0	-0.40	0.97	4	AK
VAX4B4_AL	25.3	1.76	1.51		24.3	1.60	0.71	4	AL
XUY2LV	21.7	-0.30	2.31		21.9	-0.56	0.50	4	LP
XXVKNU_AL	22.4	0.08	2.28		22.9	0.34	0.43	4	XX
Y2AHTV	18.0	-2.38 *	1.41		18.6	-3.44 X	0.46	4	XX
YQACEN_AL	18.5	-2.12 *	1.58		20.0	-2.22 *	1.36	4	AL



Containerboard Interlaboratory Testing Program  
Analysis 237

Report #623 (J)  
August 2021

**Air Resistance, 42 lb Linerboard - 42F**

TAPPI Official Test Method T460

WebCode	Monthly Results				Cumulative Results				
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
ZTEYRR	21.9	-0.20	0.38	L	22.5	-0.01	0.68	4	LA

Consensus (All Labs) Results			
Month Mean	22.23	Grand Mean	22.48
Avg SD	2.21	Avg SD Months	0.85
SD btwn Labs	1.76	SD btwn Labs	1.13
Labs Incd	40	Labs Incd	38

**Key to Instrument Codes Reported by Participants**

<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>GA</b>	Gurley Precision #4340 Automatic Densometer	<b>GG</b>	Gurley Precision #4320 Densometer
<b>LA</b>	L&W Autoline (237 Enrollment)	<b>LP</b>	L&W Air Permeance Tester SE 166
<b>TD</b>	TMI Gurley Densometer	<b>TP</b>	Technidyne Profile/ plus Roughness & Porosity
<b>XX</b>	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program  
Analysis 240

Report #623 (J)  
August 2021

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM12

TAPPI Official Test Method T809

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
24RJRE	59.6	59.3	62.4	62.5	60.9	1.19	3.9	1.7	62.3	1.80	4.2	2.2	8	TX
2AGXD2	58.0	57.0	57.5	58.5	57.7	-0.15	2.4	0.6	59.4	0.55	2.8	2.0	8	TU
2MHUCT	60.4	60.7 L	59.7	58.1	59.7	0.68	2.9	1.2	60.1	0.82	3.1	1.1	8	LZ
2Y2439	66.4 *	64.3 *	64.3	62.1	64.2	2.58 *	4.4	1.7	63.2	2.16 *	3.9	1.6	8	LD
34Q97W	60.8	60.3	58.4	58.7	59.6	0.61	4.4	1.2	59.1	0.42	4.2	2.3	8	LC
3DBE4Z	56.6	57.5	56.1	53.7	56.0	-0.88	3.2	1.7	56.7	-0.60	3.6	1.5	8	LD
3GCHX8	54.5	58.4	55.8	58.8	56.9	-0.51	3.5	2.1	55.7	-1.06	3.9	2.2	8	TH
3H9WKZ	61.6	58.0	59.9	59.9	59.9	0.75	4.4	1.5	59.5	0.57	4.9	1.1	8	TJ
3L8A2X	58.4 L	58.4	58.4	58.5	58.4	0.14	1.6	0.0 L	58.1	-0.04	1.4	0.4 L	8	LD
6A29GP	54.6	52.4	51.3 *	52.6 *	52.7	-2.25 *	3.9	1.3	54.3	-1.64	3.6	2.1	8	LC
6A7UQ	56.6	54.2	54.9	54.3	55.0	-1.29	2.9	1.1	55.6	-1.10	3.1	1.6	8	LD
7QRG2U	60.4	59.8	58.9	60.3	59.9	0.74	3.0	0.7	59.0	0.35	3.0	2.8	8	LC
8L6BRX	53.5	55.9	53.6 H	53.0	54.0	-1.72	4.2	1.3	54.2	-1.69	4.8	1.2	8	LD
8UML7Y	59.0	62.8	58.0	59.7	59.8	0.74	3.5	2.1	59.3	0.49	3.4	1.6	8	LZ
9BQERZ	59.8	57.2	57.8	60.6	58.8	0.32	4.0	1.6	58.7	0.22	3.6	1.7	8	LZ
9W7WYW	59.7	56.2	57.9	56.0	57.5	-0.26	3.2	1.7	57.2	-0.41	3.3	1.4	8	LC
A3PLUQ	57.9 H	57.2	57.6 H	58.0	57.7	-0.18	5.7	0.4	57.9	-0.12	5.4	1.2	8	LD
ADBV7Q	54.3	55.7	58.0	56.1	56.0	-0.87	3.7	1.5	56.2	-0.84	3.5	1.2	8	LZ
BCC2XK	60.4	62.1	61.4	61.0	61.2	1.32	3.3	0.7	61.3	1.37	3.3	1.9	8	EN
C69CXR	61.1	58.3	61.1	62.6	60.8	1.13	3.8	1.8	60.7	1.11	3.9	1.2	8	LD
EE8RVA	57.3	61.7	53.1	54.3 H	56.6	-0.62	5.7	3.8 H	60.5	1.03	5.4	5.2 H	8	TU
F39FXM	58.9	58.9	58.7	58.6	58.8	0.28	3.6	0.2 L	59.1	0.39	3.4	0.4 L	8	LD
FH4XQR	53.6	54.7	59.2	60.8	57.1	-0.43	4.1	3.4 H	54.9	-1.40	5.0	4.2 H	8	MB
GA4V3K	56.0	54.0	57.6	56.9	56.1	-0.82	3.4	1.6	56.1	-0.88	3.7	1.1	8	LD
H7ZJG6	58.3	57.9	59.7	61.8	59.4	0.56	3.6	1.7	59.2	0.46	3.9	1.9	8	LD
JBAYQT	59.5 L	59.4 L	59.3 L	59.3 L	59.3	0.53	0.9	0.1 L	59.4	0.53	1.2	0.1 L	8	LD
JNW9BD	41.6 X	44.1 X	43.7 X	45.8 X	43.8	-6.00 X	4.3	1.8	43.6	-6.26 X	4.9	1.4	8	TC
K6XDDF	No DATA	56.5	No DATA	57.4	56.9	-0.50	3.3	0.6	56.9	-0.52	3.7	0.4 L	3	LD
KAVWFE	52.6 *	52.4	54.6	57.3	54.2	-1.62	4.2	2.3	54.7	-1.49	4.3	1.9	8	EM
LABDA8	56.5	56.2	57.4	57.6 L	56.9	-0.48	2.2	0.7	56.9	-0.53	2.7	0.6	8	LD
LNN7FP	56.5	54.4	55.5	56.3	55.7	-1.02	3.0	1.0	56.3	-0.78	3.0	1.2	8	LD
ND66JF	60.2 L	56.5	54.3	57.9	57.3	-0.35	2.9	2.5	58.0	-0.07	3.4	2.4	8	LZ
NFPZW9	59.0	58.4	57.9	58.8	58.5	0.18	2.4	0.5	58.1	-0.01	2.9	0.6	8	LC
PM62RB	59.6	61.7	58.9	57.0	59.3	0.50	3.1	2.0	59.3	0.48	3.0	1.4	8	LD
PPDCNE	57.9 L	57.7	62.0 H	58.9	59.1	0.44	3.5	2.0	58.5	0.14	2.6	1.5	8	LC



Containerboard Interlaboratory Testing Program

Analysis 240

Report #623 (J)

August 2021

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM12

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	
RFUPQV	61.7	60.1	60.0	61.0	60.7	1.11	3.3	0.8	59.7	0.67	2.8	1.3	8	LD
RQE228	57.0	56.6 L	54.6	57.9	56.5	-0.66	3.5	1.4	56.5	-0.70	3.6	1.5	8	LD
RWKWL8	58.8	60.6	60.5	59.9	60.0	0.78	3.9	0.8	61.1	1.25	3.7	1.7	8	LD
TQAYUE	66.4 *	68.5 X	66.6 *	62.9	66.1	3.36 X	3.7	2.4	66.1	3.41 X	3.7	2.4	4	LD
UBC993	57.8	58.4	58.2	58.9	58.3	0.10	2.9	0.5	58.0	-0.05	3.0	0.6	8	LD
UBFTYQ	30.1 X	27.7 X	29.7 X	27.2 X	28.7	-12.36 X	3.7	1.5	43.2	-6.43 X	7.2	15.9 H	8	XX
UHFD2L	57.4	52.9	56.9	54.0	55.3	-1.17	3.9	2.2	55.9	-0.97	4.3	1.8	8	LD
UZXC7J	58.1	56.7	55.9	56.0	56.7	-0.59	2.4	1.0	55.9	-0.96	2.6	1.4	8	EN
VAX4B4	55.6	53.3	52.4	54.6	53.9	-1.74	3.5	1.4	53.9	-1.84	3.3	1.0	8	LD
VLTDXD	57.5	55.5	58.8	55.1	56.7	-0.58	2.3	1.8	56.9	-0.52	2.5	1.7	8	TH
VMPVV9	60.2 L	59.4 L	61.2 L	63.2 L	61.0	1.22	0.9	1.6	61.3	1.35	1.0	1.6	8	XX
VRWJ9A	64.1	63.1	64.0 L	63.3	63.6	2.32 *	3.4	0.5	63.5	2.31 *	4.1	0.8	8	LC
WABBQ7	56.8 H	57.9	57.5	59.3 H	57.9	-0.09	5.3	1.1	58.1	-0.03	5.0	1.1	8	TG
WF2PDR	59.7	58.4	56.6	61.9	59.2	0.45	3.8	2.2	59.2	0.44	3.8	2.2	4	LD
WQKY47	54.0	55.3	53.2	58.2	55.2	-1.22	3.5	2.2	54.4	-1.61	3.6	1.8	8	LD
XQXV66	65.5 *L	65.9 *	66.4 *	65.4 *	65.8	3.24 X	1.6	0.5	65.6	3.19 X	1.6	0.4 L	8	MB
XUY2LV	61.5	58.4	59.4	61.0	60.1	0.84	3.4	1.4	60.4	0.95	3.7	2.1	8	LD
XXVKNU	62.1	60.4	56.2	58.7	59.4	0.53	3.8	2.5	58.2	0.02	4.2	2.1	8	LD
ZHRZY2	60.8	58.3	57.7	55.3 L	58.0	-0.02	3.4	2.3	58.1	-0.01	3.3	2.0	8	LD

Consensus (All Labs) Results												
Wk Mean	58.72	57.98	58.18	58.54	Month Mean	58.09		Grand Mean	58.15			
Avg SDr	3.85	3.46	3.51	3.26	Avg SD	3.55		Avg SD	3.63			
SD btwn Labs	3.10	2.97	3.25	2.91	SD btwn Labs	2.38		SD btwn Labs	2.32			
Labs Incl	51	51	51	52	SD btwn Wks	1.64		SD btwn Wks	1.82			
Labs Excl	2	3	2	2	Labs Incl	50		Labs Incl	50			
Labs not Rcvd	1	0	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	TG	TMI Compression Tester, Model 17-10
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	TX	TMI Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program  
Analysis 250

Report #623 (J)  
August 2021

Fluted Edge Crush Strength (FCF), 26 lb Corrugating Medium - CM12

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
2MHUCT	65.5	67.0	65.8	66.0	66.1	-0.82	3.1	0.7	66.5	-1.20	3.0	0.8	8	LZ
34Q97W	68.6	67.5	66.6 H	70.8	68.4	0.15	4.2	1.8	71.2	1.38	3.8	4.7 H	8	LC
3GCHX8	62.7 *	63.9	64.4	64.4 *	63.9	-1.76	3.6	0.8	62.7	-3.34 X	3.3	1.6	8	TH
3L8A2X	69.3	69.3	69.3	69.3 L	69.3	0.53	1.6	0.0 L	69.2	0.29	1.6	0.1 L	8	LD
9W7WYW	68.2	65.1	71.4	69.2	68.5	0.19	2.9	2.6	69.4	0.38	2.5	2.4	8	LC
BAK3JL	52.5 X	53.2 X	51.9 X	53.1 X	52.7	-6.49 X	3.5	0.6	52.7	-8.90 X	3.5	0.6	4	LD
BCC2XK	61.4 *	62.0 *	69.3	68.4	65.3	-1.16	4.3	4.1 H	66.3	-1.30	4.2	3.0	8	EN
C69CXR	65.6	67.5	66.5	65.9	66.4	-0.70	4.1	0.9	66.6	-1.14	4.0	0.9	8	LD
GA4V3K	57.9 XH	56.9 XH	66.3	66.8	62.0	-2.57 *	5.2	5.3 H	64.7	-2.20 *	4.7	4.7 H	8	LD
K6XDDF	No DATA	70.5	69.8	69.7	70.0	0.83	2.5	0.4	70.3	0.89	2.7	0.7	4	LD
ND66JF	72.5	67.7	65.2	66.2	67.9	-0.06	3.0	3.2	68.5	-0.09	3.6	2.3	8	LZ
NFPZW9	69.7 H	68.8 H	68.6	69.0 H	69.0	0.42	5.7	0.5	69.5	0.45	5.1	0.9	8	LD
PM62RB	70.1	65.8	67.8	67.7	67.8	-0.08	3.0	1.8	67.9	-0.46	3.2	1.3	8	LD
QQ28L8	69.1	70.4	69.4	69.6 L	69.6	0.68	2.5	0.6	68.8	0.04	2.3	1.0	8	LZ
RFUPQV	70.5	69.1	72.9 *	72.7	71.3	1.39	2.0	1.8	70.6	1.04	1.9	1.9	8	LD
RQE228	71.2	69.2 H	69.6	69.9	70.0	0.84	3.7	0.9	70.4	0.96	3.7	1.4	8	LD
UHFD2L	66.6	66.9	68.3	68.5	67.6	-0.19	3.1	1.0	67.8	-0.48	3.5	0.9	8	LD
VAX4B4	67.1	68.0	66.3	66.8	67.1	-0.41	3.3	0.7	67.3	-0.76	3.4	0.7	8	LD
VMPVV9	70.0 L	68.8 L	70.8 L	73.3 *L	70.7	1.14	0.8	1.9	70.8	1.16	0.8	1.3	8	XX
XQXV66	71.3	71.9	70.4	71.5 L	71.3	1.38	1.6	0.6	71.2	1.43	1.6	0.5 L	8	MB
XUY2LV	69.9	68.3	67.4 H	69.2	68.7	0.28	4.5	1.1	68.0	-0.40	4.9	3.9	8	LD
YHGYFN	68.3	66.7	68.3 L	68.0	67.8	-0.09	2.3	0.8	68.7	0.00	2.2	1.1	8	LD

Consensus (All Labs) Results													
Wk Mean	68.29	67.72	68.30	68.71	Month Mean	68.02	Grand Mean	68.68					
Avg SDr	3.50	3.21	3.27	3.22	Avg SD	3.39	Avg SD	3.34					
SD btwn Labs	2.89	2.30	2.19	2.27	SD btwn Labs	2.37	SD btwn Labs	1.80					
Labs Incl	19	20	21	21	SD btwn Wks	1.99	SD btwn Wks	2.17					
Labs Excl	2	2	1	1	Labs Incl	21	Labs Incl	20					
Labs not Rcvd	1	0	0	0									

Key to Instrument Codes Reported by Participants

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	TH	TMI Compression Tester, Model 17-76
XX	Instrument make/model not specified by lab		



**Containerboard Interlaboratory Testing Program**  
 Analysis 255  
**Ring Crush (RCT), 26 lb Corrugating Medium - CM12**  
 TAPPI Official Test Method T822

**Report #623 (J)**  
**August 2021**

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
24RJRE	36.4	34.9 *	37.0	37.4	36.4	-1.76	3.1	1.1	36.7	-1.55	3.1	1.5	8	LZ
2AGXD2	39.3	41.5	38.1	40.8	39.9	-0.61	2.9	1.5	39.7	-0.65	2.7	1.2	8	TU
3DBE4Z	43.5	41.9	42.5	43.1	42.7	0.30	3.2	0.7	43.2	0.40	3.6	1.0	8	LD
3GCHX8	38.9	38.9	39.0	39.9	39.2	-0.86	2.8	0.5	39.0	-0.87	2.6	0.7	8	TH
9BQERZ	45.0	43.1	41.2	41.7	42.8	0.31	2.9	1.7	41.8	-0.03	2.7	2.0	8	LD
9W7WYW	41.2	43.0	42.9	44.0	42.8	0.32	3.2	1.2	44.3	0.73	3.3	2.0	8	LC
A3PLUQ	36.7	45.4	39.9	35.4 *H	39.3	-0.80	4.9	4.5 H	37.8	-1.24	5.0	4.0 H	8	LD
C69CXR	45.2	45.7	44.6	44.1	44.9	1.02	3.1	0.7	45.1	0.97	3.0	1.1	8	LD
DV3RBP	42.3	44.1	44.4 H	44.0	43.7	0.61	4.9	0.9	43.9	0.60	4.6	1.1	8	XX
F39FXM	43.6	43.3	43.5	43.7	43.5	0.57	2.6	0.2 L	44.1	0.67	2.4	0.6	8	LD
FH4XQR	43.5	41.4	41.1	43.0	42.2	0.14	2.5	1.2	42.5	0.19	3.2	1.2	8	MB
GPJVWQ	42.4	42.9	42.7	44.5	43.1	0.44	2.9	1.0	43.0	0.34	3.2	1.3	8	LZ
H7ZJG6	43.9	44.0	45.6	46.6	45.0	1.05	2.8	1.3	44.7	0.86	2.9	1.1	8	LD
JBAYQT	45.4	45.3	45.6 L	45.2 L	45.4	1.16	1.7	0.2 L	45.5	1.08	1.6	0.2 L	8	LD
JNW9BD	36.5 H	35.6	34.2 *	34.4 *	35.1	-2.17 *	4.5	1.1	35.9	-1.81	4.9	1.5	8	TC
KAVWFE	42.1	45.5	44.5	43.5	43.9	0.69	3.3	1.4	43.8	0.58	3.5	1.0	8	EM
LABDA8	44.4	45.2	45.9	45.3	45.2	1.12	2.3	0.6	44.6	0.82	2.3	0.9	8	LC
PM62RB	41.8	40.8	40.6	42.2	41.3	-0.16	4.1	0.8	42.4	0.15	4.3	1.6	8	LD
PPDCNE	47.6 L	46.4	42.5	44.7	45.3	1.15	2.5	2.2	46.6	1.42	1.9	2.0	8	LC
RQE228	44.1	46.3	41.1	46.8	44.6	0.90	2.7	2.6	44.4	0.76	3.0	1.7	8	LD
VAX4B4	40.4	40.8	40.1	42.1	40.9	-0.31	3.6	0.9	41.4	-0.13	2.8	0.9	8	LD
VJPJY9	41.0	42.6	41.3	41.8	41.7	-0.05	3.1	0.7	42.8	0.27	2.9	2.3	8	TH
VLTDXD	34.9 *	34.8 *	36.3	34.2 *	35.0	-2.21 *	3.2	0.9	35.4	-1.96 *	2.8	1.4	8	TH
VRWJ9A	37.4	36.5	37.5	38.9	37.6	-1.38	4.4	1.0	34.4	-2.24 *	4.9	3.7 H	8	XX
WF2PDR	45.6	48.5	No DATA	43.0	45.7	1.27	3.7	2.8	45.6	1.11	3.5	1.7	7	LZ
WQKY47	39.9	40.5	38.2	41.8	40.1	-0.56	4.1	1.5	40.2	-0.52	3.6	1.3	8	LD
XQXV66	42.1	40.6	40.5	44.3 L	41.9	0.03	1.6	1.8	42.4	0.16	1.6	1.4	8	MB
ZHRZY2	42.5	40.9	42.4	38.8	41.1	-0.22	2.9	1.7	41.5	-0.10	3.0	1.5	8	EM

Consensus (All Labs) Results														
Wk Mean	41.70	42.15	41.23	41.96	Month Mean	41.80			Grand Mean	41.89				
Avg SDr	3.25	3.23	3.29	3.38	Avg SD	3.29			Avg SD	3.29				
SD btwn Labs	3.23	3.58	3.05	3.41	SD btwn Labs	3.06			SD btwn Labs	3.33				
Labs Incl	28	28	27	28	SD btwn Wks	1.57			SD btwn Wks	1.69				
Labs Excl	0	0	0	0	Labs Incl	28			Labs Incl	28				
Labs not Rcvd	0	0	1	0										



Containerboard Interlaboratory Testing Program  
Analysis 255  
**Ring Crush (RCT), 26 lb Corrugating Medium - CM12**  
TAPPI Official Test Method T822

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

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



Containerboard Interlaboratory Testing Program

Analysis 261

Report #623 (J)

August 2021

STFI, 26 lb Corrugating Medium - CM12

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
2Y2439	14.0	14.1 L	14.5 L	14.0	14.2	1.03	0.6	0.2	14.2	1.10	0.6	0.2	8	LH
3GCHX8	12.9	13.0	12.1 *	12.4	12.6	-1.67	1.0	0.4	12.8	-1.46	1.1	0.4	8	LH
3H9WKZ	14.0	13.4	13.7	13.0	13.5	-0.08	1.0	0.4	13.6	0.00	1.0	0.3	8	TT
3L8A2X	13.5 L	13.7 L	13.6 L	13.6 L	13.6	0.02	0.4	0.1	13.7	0.21	0.4	0.1	8	LA
6AQ7UQ	13.1 H	12.9	13.1	12.8	13.0	-1.01	1.1	0.2	13.0	-1.08	1.1	0.2	8	LU
8LUAB6	13.0	13.8 H	13.7 H	13.5	13.5	-0.13	1.4	0.3	13.9	0.59	1.1	0.5	8	LA
9BQERZ	13.6	13.3	13.3	13.9	13.5	-0.04	1.0	0.3	13.4	-0.44	1.1	0.4	8	LZ
9W7WYW	13.3	13.3	13.2	13.8 H	13.4	-0.30	1.2	0.2	13.5	-0.23	1.0	0.4	8	LU
A3PLUQ	14.1	15.7 X	14.6	14.9 *	14.8	2.18 *	0.9	0.7	14.7	2.16 *	1.2	0.6	8	LA
BCC2XK	12.9	12.7	12.6 H	12.8	12.7	-1.43	1.3	0.1	12.6	-1.80	1.1	0.2	8	LU
BMW9WA	13.8	13.8	13.8	13.6	13.7	0.30	1.0	0.1 L	13.9	0.51	0.9	0.5	8	LU
C69CXR	13.2 H	13.5	13.0	12.9	13.2	-0.71	1.1	0.2	13.2	-0.75	1.1	0.3	8	LB
EE8RVA	12.7	13.3	13.3	11.8 *	12.8	-1.35	1.0	0.7	13.5	-0.16	1.0	0.9 H	8	LA
FH4XQR	15.1 *	13.3 L	14.9 L	13.1	14.1	0.94	0.7	1.0 H	14.0	0.73	0.9	0.8	8	LA
GA4V3K	13.5	13.3	13.8	13.5	13.5	-0.11	1.0	0.2	13.5	-0.16	1.0	0.2	4	LA
GHHLNC	13.7	14.0 H	14.3	13.9	14.0	0.71	1.2	0.2	13.9	0.58	1.1	0.2	8	LA
GPJVWQ	13.1	13.5	13.0	14.2	13.4	-0.24	0.9	0.5	13.3	-0.55	0.9	0.4	8	LA
JNW9BD	13.1	13.0	13.3	13.1	13.1	-0.80	1.0	0.1	13.0	-1.07	1.0	0.2	8	TS
LABDA8	14.1	15.0 *	14.3	14.1	14.4	1.35	1.1	0.4	14.0	0.68	1.0	0.6	8	LH
NFPZW9	13.4	13.3	14.1	13.0	13.5	-0.20	0.8	0.5	13.3	-0.56	0.8	0.5	8	LB
UBC993	13.0	13.7	14.0	13.9	13.6	0.12	0.8	0.5	13.7	0.12	0.9	0.4	8	LB
UHFD2L	14.4	14.8 *	13.6	15.3 *H	14.5	1.65	1.0	0.7	14.7	2.10 *	1.1	0.5	8	LA
UZXC7J	13.6	13.2	13.3	13.4	13.4	-0.34	1.1	0.2	13.5	-0.22	1.1	0.3	8	LH
VAX4B4	14.4	14.5	14.8	13.6	14.3	1.29	0.9	0.5	14.1	0.95	1.0	0.5	8	LA
VMPVV9	12.5 L	12.9 H	13.0	13.1	12.9	-1.17	1.1	0.3	12.9	-1.28	1.1	0.5	8	XX
WQKY47	8.2 XL	9.8 X	9.6 X	10.2 X	9.5	-7.06 X	0.9	0.9 H	9.4	-7.81 X	1.0	1.0 H	8	LZ

Consensus (All Labs) Results									
Wk Mean	13.51	13.54	13.64	13.50	Month Mean	13.57		Grand Mean	13.59
Avg SDr	0.99	1.00	0.99	1.03	Avg SD	1.00		Avg SD	1.00
SD btwn Labs	0.60	0.58	0.69	0.74	SD btwn Labs	0.58		SD btwn Labs	0.53
Labs Incl	25	24	25	25	SD btwn Wks	0.43		SD btwn Wks	0.45
Labs Excl	1	2	1	1	Labs Incl	25		Labs Incl	25
Labs not Rcvd	0	0	0	0					





Containerboard Interlaboratory Testing Program  
Analysis 261  
**STFI, 26 lb Corrugating Medium - CM12**  
TAPPI Official Test Method T826

**Report #623 (J)**  
**August 2021**

**Key to Instrument Codes Reported by Participants**

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

End of Report