



## Containerboard Interlaboratory Testing Program

Participant Summary Report #621 (F) - June 2021

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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	CM11	April 2019 - Current
	CM92	January 2018 - March 2019
35# Corrugating Medium	35E2	June 2020 - Current
	35E1	June 2017 - April 2020
42# Corrugating Medium	42F3	November 2020 - Current
	42F2	March 2020 - October 2020
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.

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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'.
- Labs Incd - 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>
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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 #621 (F)  
June 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
2HZRNV	868.7	1.13	29.41	870.6	1.26	25.48	4	LG
2WUGJR	850.8	0.79	47.81	782.7	-0.65	115.65 H	4	EM
3HT6NT	722.9	-1.67	38.81	755.4	-1.24	24.77	4	LG
6RRF8M	754.2	-1.07	50.90	742.5	-1.53	15.16	4	LL
73TBVB	783.4	-0.51	24.62	796.3	-0.36	42.06	4	LM
7NPYAJ	815.9	0.12	31.77	820.6	0.17	20.93	4	LS
8FQVLD	726.6	-1.60	66.64	813.0	0.01	76.19	3	LH
8NRYZC	860.3	0.97	66.79	869.3	1.23	27.72	4	LO
8P2X8E	824.4	0.28	69.67	859.5	1.02	24.50	4	LG
ANEE3J	867.0	1.10	25.99	857.6	0.98	32.02	4	ER
CVRWM4	846.2	0.70	44.57	835.1	0.49	25.88	4	EX
DYARQ9	842.8	0.63	90.42	835.7	0.50	32.83	4	LG
E738QC	809.3	-0.01	41.36	750.9	-1.34	45.85	4	LS
GNFGUA	783.0	-0.52	72.54	820.1	0.16	35.79	4	ES
GQGEFB	863.0	1.02	49.31	852.4	0.86	41.21	4	LS
KK27F4	768.8	-0.79	72.75	858.4	0.99	61.64	4	ET
LCLWFE	763.2	-0.90	59.34	789.2	-0.51	32.84	4	LM
LCMGFB	863.1	1.02	54.94	861.0	1.05	26.08	4	LG
M63Z3Q	834.6	0.48	22.47	827.7	0.33	56.52	4	ER
MGTW24	815.9	0.12	57.25	831.4	0.41	27.61	4	LL
MQZAH8	753.9	-1.08	69.37	785.1	-0.60	44.12	2	LS
NA8Y9A	800.4	-0.18	72.31	830.1	0.38	21.75	4	EX
NKQL94	785.6	-0.47	103.83	812.0	-0.01	17.69	4	ER
QTHJBW	851.0	0.79	32.92	799.5	-0.29	50.48	4	LG
QU9TVX	914.9	2.02 *	14.32	897.8	1.85	28.57	4	EX
U8PZ9Z	719.4	-1.74	23.93	720.2	-2.01 *	16.95	4	LL
VCCWLP	737.4	-1.39	98.22	712.1	-2.19 *	33.65	4	TB
VQ9ECN	821.8	0.23	58.12	790.2	-0.49	29.92	4	EX
ZQHP7P	773.5	-0.70	84.55	776.9	-0.78	44.43	4	ER
ZXXH7M	873.8	1.23	65.30	826.7	0.31	48.13	3	EX

Consensus (All Labs) Results

Month Mean	809.86	Grand Mean	812.65
Avg SD	59.33	Avg SD Months	42.55
SD btwn Labs	51.97	SD btwn Labs	46.02
Labs Incd	30	Labs Incd	30



Containerboard Interlaboratory Testing Program  
Analysis 201

Report #621 (F)  
June 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	806.00	71.36	3.86	9
Water based adhesive sealing	850.80	0.00	40.94	1
Clip sealing	809.55	43.39	0.31	20

**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	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 #621 (F)**  
**June 2021**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
3LU9DU	39.8	-0.71	0.79 L	38.2	-1.28	1.41	4	TF
7NPYAJ	43.4	0.25	2.78	41.9	-0.21	1.14	4	LD
8P2X8E	43.7	0.33	2.23	45.0	0.71	0.94	4	EM
DBD4X8	48.0	1.47	1.28	45.3	0.79	2.43	4	LC
DYARQ9	41.1	-0.36	2.24	42.2	-0.12	1.14	4	LE
E738QC	34.6	-2.09 *	1.41	34.7	-2.31 *	1.79	4	EM
M92BXQ	48.2	1.53	1.36	46.9	1.26	2.16	4	XX
NA8Y9A	42.7	0.05	2.28	44.3	0.50	1.21	4	LC
QU9TVX	42.2	-0.09	1.85	41.9	-0.20	0.56	4	LC
UYUX7P	38.8	-0.98	3.08	41.8	-0.25	2.48	4	LD
WPVWQX	42.4	-0.01	2.55	43.3	0.19	1.41	3	XX
ZQHP7P	44.8	0.62	3.23	45.8	0.93	1.10	4	EN

Consensus (All Labs) Results			
Month Mean	42.49	Grand Mean	42.61
Avg SD	2.22	Avg SD Months	1.59
SD btwn Labs	3.76	SD btwn Labs	3.42
Labs Incl	12	Labs Incl	12

**Key to Instrument Codes Reported by Participants**

<b>EM</b>	Emerson 1200 Series	<b>EN</b>	Emerson 2200
<b>LC</b>	L&W Crush Tester 48	<b>LD</b>	L&W Crush Tester 248
<b>LE</b>	L&W Crush Tester 840	<b>TF</b>	TMI Digital Crush Tester, Model 17-19
<b>XX</b>	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 #621 (F)**  
**June 2021**

WebCode	Monthly Results				Cumulative Results					
	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst	
2HZRNV	49.4	1.34	4.56	H	46.3	0.33	3.83	4	MK	
2N6QYK	44.7	-0.21	1.14		43.4	-0.77	1.77	2	LC	
2WUGJR	39.1	-2.04 *	3.52	H	42.5	-1.13	4.78	H	4	TH
3LU9DU	42.3	-0.98	0.82	L	41.7	-1.45	1.04		4	TD
6PNKKN	46.1	0.26	1.10		44.6	-0.32	1.70		3	XX
73TBVB	45.5	0.05	3.48	H	46.5	0.40	1.91		4	EM
7NPYAJ	44.5	-0.26	1.45		43.8	-0.63	0.89		4	LD
8FQVLD	45.7	0.12	2.32		46.2	0.32	3.94	H	3	EM
8NRYZC	43.6	-0.56	1.78		43.5	-0.74	0.28	L	4	LD
ANEE3J	45.6	0.08	0.83	L	44.7	-0.29	0.97		4	EM
CVRWM4	46.5	0.38	1.68		47.1	0.67	1.84		4	LD
DBD4X8	46.8	0.50	1.31		47.0	0.63	1.03		4	LC
DYARQ9	45.8	0.17	2.98		45.7	0.11	0.60		4	LY
E738QC	41.1	-1.37	1.46		43.1	-0.91	1.57		4	EM
GNFGUA	46.7	0.46	0.78	L	47.3	0.73	0.67		4	LD
GQGEFB	53.0	2.50 *	1.70		51.3	2.27 *	1.74		4	TB
J7KQXE	43.3	-0.67	2.06		45.2	-0.09	2.84		4	TD
KK27F4	42.1	-1.06	1.42		44.7	-0.28	1.83		4	TD
LCLWFE	45.1	-0.09	0.96		45.5	0.03	0.93		4	TG
M4NB2Z	47.6	0.76	1.78		48.8	1.32	1.27		4	XX
M63Z3Q	46.6	0.40	0.84	L	46.4	0.37	1.32		4	LD
M92BXQ	46.8	0.49	1.71		46.9	0.59	1.73		4	XX
MGTW24	45.9	0.20	0.98		46.4	0.39	1.12		4	BU
MVDIFY	39.3	-1.97 *	3.29	H	39.3	-2.35 *	0.86		4	XX
NA8Y9A	45.3	0.00	0.50	L	45.5	0.04	0.55		4	LC
NKQL94	47.3	0.64	1.83		47.1	0.64	0.80		4	LD
PY8P6X	37.2	-2.66 *	1.45		40.8	-1.78	2.45		4	TD
QU9TVX	48.4	1.01	1.07		48.4	1.15	0.24	L	4	LC
TQZHRT	48.2	0.95	2.60		47.6	0.86	1.40		4	TG
U84BXT	31.1	-4.63 X	1.23		38.9	-2.51 *	5.36	H	4	TK
U8PZ9Z	46.1	0.24	0.63	L	44.5	-0.34	1.37		4	LC
UYUX7P	43.3	-0.66	3.40	H	45.0	-0.16	1.89		4	LD
V7NE7T	48.2	0.93	1.17		49.4	1.53	1.12		4	LD
VCCWLP	49.0	1.21	0.63	L	48.1	1.02	0.71		4	LD
VQ9ECN	44.5	-0.27	0.92		45.2	-0.10	1.04		4	TL
WPVVQX	44.4	-0.30	1.83		45.3	-0.06	1.20		3	XX
YQFUWQ	48.7	1.09	1.36		48.4	1.15	0.54		3	EM
ZQHP7P	45.9	0.18	2.13		45.3	-0.03	1.11		4	EN
ZXXH7M	42.7	-0.84	2.52		43.8	-0.61	0.94		3	CT





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

**Report #621 (F)**  
**June 2021**

Consensus (All Labs) Results			
Month Mean	45.32	Grand Mean	45.41
Avg SD	1.98	Avg SD Months	1.94
SD btwn Labs	3.07	SD btwn Labs	2.60
Labs Incl	38	Labs Incl	39

**Key to Instrument Codes Reported by Participants**

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



**Containerboard Interlaboratory Testing Program**  
 Analysis 205  
**Bursting Strength (Mullen), 42 Ib Linerboard - 42F3**  
 TAPPI Official Test Method T807

**Report #621 (F)**  
**June 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	
2377JN	111.7	107.3	No DATA	No DATA	109.5	-0.28	9.5	3.1	112.4	0.55	8.9	3.1	8	LC
3LU9DU	111.9	108.2	110.8	110.7	110.4	-0.01	8.9	1.6	110.2	-0.19	11.5	3.8	16	XX
3WUMNT	108.6	105.5	95.0 XH	108.1	104.3	-1.81	17.3	6.3 H	104.3	-2.15	*17.3	6.3	4	XX
788NYJ	109.3	110.4	108.6	110.2	109.6	-0.24	8.9	0.8	109.3	-0.48	8.1	1.8	16	LA
7NPYAJ	104.8	108.8	109.0	107.3	107.5	-0.87	8.9	1.9	107.9	-0.93	8.2	2.8	16	LA
7W3TPL	109.9	110.5	111.5	112.8	111.2	0.22	7.4	1.3	110.6	-0.05	6.7	1.5	16	TP
8TFVCF_AL	107.2	108.3	108.5	107.9	108.0	-0.72	8.9	0.6	108.5	-0.74	8.3	2.1	16	AL
8ZGV2A_AL	107.1	109.7	108.9	110.4	109.0	-0.42	10.7	1.4	110.4	-0.12	10.2	2.4	16	AL
AE6Y7J	124.3 *H	124.1 XH	117.9	121.8 *	122.0	3.41 X	12.8	3.0	121.2	3.47 X	10.2	4.0	16	AX
BMFKUD_AL	119.3	116.2	110.2 H	105.2	112.7	0.67	10.1	6.3 H	114.7	1.32	7.7	5.2	16	AL
CANDAG	119.8	117.3	127.3 X	118.2	120.7	3.00 X	11.4	4.6	113.6	0.95	8.3	5.1	16	AC
CGTZCJ	103.4	106.4	111.6	116.6	109.5	-0.28	8.3	5.8 H	109.3	-0.49	8.3	4.7	16	AH
CGTZCJ_AL	118.7	115.8 H	114.8	111.0	115.1	1.36	11.9	3.2	115.3	1.50	10.4	2.8	16	AL
CVRWM4	113.6	109.6	109.6	109.6	110.6	0.05	7.4	2.0	111.3	0.18	8.8	3.4	16	AH
D6XA86	112.9	112.8	115.2	115.5	114.1	1.08	10.3	1.4	114.8	1.33	10.0	2.9	16	LA
DEJDE6	105.8	104.2	103.0	105.5	104.6	-1.71	8.3	1.3	106.8	-1.31	8.8	2.3	12	LB
DYARQ9	112.6	110.0	114.6	114.0	112.8	0.69	7.2	2.0	113.0	0.75	7.1	1.6	16	AH
EAJN9G	98.7 *	100.1 *	95.8 X	97.9 *	98.1	-3.62 X	5.9	1.8	98.2	-4.18 X	6.9	1.9	12	LA
ECBH97	114.2	112.3	119.9 *	116.6	115.8	1.56	5.8	3.3	115.3	1.51	6.4	2.5	12	LC
F69VUC	107.4	106.9	106.6	109.8	107.7	-0.82	4.7	1.5	106.7	-1.35	4.0	2.5	16	LA
G9ZJPA_AL	107.5	106.5	110.7	108.4	108.3	-0.64	8.1	1.8	108.3	-0.80	8.3	2.4	16	XX
GEQWPC	113.3	112.2	107.6 H	105.9	109.7	-0.20	11.6	3.5	108.4	-0.78	10.2	2.6	16	LJ
GNFGUA	108.8	108.1	104.9	114.5	109.1	-0.40	10.0	4.0	108.5	-0.73	9.4	2.9	16	LA
H3BDH2	111.8 H	109.1	No DATA	No DATA	110.5	0.00	14.2	1.9	111.1	0.13	11.9	4.0	6	LC
H3BDH2_AL	108.0	107.7	No DATA	No DATA	107.8	-0.76	8.1	0.2	111.5	0.23	9.5	2.9	6	AL
H7TLU8	110.4	112.7	105.3	111.9	110.1	-0.11	6.5	3.3	111.0	0.09	7.4	3.1	16	LA
H7TLU8_AL	110.6 L	109.0	110.4	107.1	109.3	-0.35	5.0	1.6	110.5	-0.10	6.3	2.0	16	AL
HMWVXD	112.6	111.6	112.4	114.4	112.8	0.68	7.6	1.2	110.8	0.03	6.3	2.1	16	AX
HMWVXD_A	113.4	109.4	105.5	109.9	109.6	-0.26	7.4	3.2	109.9	-0.29	7.8	2.7	16	AL
HNBKY6_AL	110.5	115.1	117.8	121.3 *	116.2	1.68	7.1	4.6	114.0	1.09	7.8	5.7	16	AL
HXFJHE	110.9	103.9	105.9	110.1	107.7	-0.81	8.4	3.4	105.7	-1.67	8.3	3.5	16	LA
JAUNJ9	109.3	106.2	113.8	106.6	109.0	-0.43	10.6	3.5	108.1	-0.87	9.2	2.6	16	LC
JHHQC4	108.2	106.6	104.9 L	107.8	106.9	-1.05	4.0	1.5	107.2	-1.18	4.3	1.4	16	XX
JTFRP8	117.8	115.4	114.2	109.7	114.3	1.13	8.6	3.4	113.6	0.96	10.0	3.6	8	LC
JTFRP8_AL	108.7	108.7	109.1 H	110.1	109.1	-0.38	11.7	0.7	111.1	0.13	11.5	3.5	8	AL



**Containerboard Interlaboratory Testing Program**  
**Analysis 205**  
**Bursting Strength (Mullen), 42 Ib Linerboard - 42F3**  
 TAPPI Official Test Method T807

**Report #621 (F)**  
**June 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				
JTXUL9_AL	112.0	116.5	110.0	110.0	L	112.1	0.49	9.4	3.1	111.5	0.26	9.7	4.0	16	AL		
K4TCNU	111.6	111.6	111.1	111.1		111.4	0.27	5.4	0.3	L	111.5	0.24	5.3	0.5	L	12	LJ
KBVCB4_AL	113.3	110.9	111.0	107.0		110.6	0.03	5.4	2.6		110.6	-0.04	6.8	2.0	16	AL	
KHG8C8_AL	112.2	113.1	106.4	107.3		109.8	-0.20	8.3	3.4		110.9	0.07	8.5	3.6	16	AL	
KNZGC4	113.6	113.0	113.5	113.1		113.3	0.84	5.7	0.3	L	112.9	0.73	5.0	0.5	L	16	LA
L2PRN2	112.7	108.6	106.2	109.0		109.1	-0.39	10.4	2.7		107.6	-1.05	9.0	2.7	16	LC	
M63Z3Q	105.5	108.4	105.8	107.1		106.7	-1.09	10.0	1.3		109.4	-0.46	9.7	2.9	16	LZ	
M6H8DZ	120.6 *	105.5	120.3 *	118.6		116.3	1.71	11.0	7.2	H	115.6	1.62	9.3	4.5	16	TB	
M7DQF2_AL	108.2	106.5	106.2	104.6		106.4	-1.20	9.3	1.5		109.4	-0.46	8.1	2.7	16	AL	
M92BXQ	115.4 L	115.8 L	116.7	114.0 L		115.5	1.48	3.5	1.1		116.7	1.98 *	3.5	1.6	16	LC	
NKQL94	106.0	101.1 *	104.0	102.2		103.3	-2.09 *	7.3	2.1		103.7	-2.33 *	8.8	3.1	16	AH	
PCGE9T_AL	113.5	112.6	110.3	111.6		112.0	0.46	7.0	1.4		110.6	-0.04	6.9	2.8	16	AL	
PEE7QQ	105.6	113.5	108.5	112.5		110.0	-0.12	9.4	3.7		110.6	-0.05	9.5	2.7	16	LC	
QU9TVX	110.1	107.2	107.8	108.1		108.3	-0.63	9.1	1.3		110.2	-0.19	9.5	2.5	16	AH	
REXKHZ_AL	105.1 H	110.6	109.8	112.7		109.6	-0.26	11.7	3.2		110.6	-0.05	9.3	2.9	16	AL	
RKHH99	107.4	113.1	110.1	107.9		109.6	-0.24	8.4	2.6		110.2	-0.18	8.5	3.3	16	LA	
RLUFFY	116.2 L	111.0	110.0	110.8		112.0	0.46	5.3	2.8		113.1	0.78	5.5	3.0	16	AH	
TFHZYL	107.0	107.1	105.2	106.2		106.4	-1.20	5.0	0.9		108.2	-0.84	7.0	2.6	16	LA	
TVUEEY	109.0	110.1	109.0	109.1		109.3	-0.34	6.9	0.5		110.2	-0.18	6.8	1.2	16	AH	
TVZGGP	109.5	109.1	105.9	102.3		106.7	-1.10	9.6	3.3		109.6	-0.40	9.2	4.4	14	LZ	
UYUX7P	106.8	105.5	107.7	108.2		107.1	-0.99	7.7	1.2		109.2	-0.51	6.5	2.6	16	LA	
V7NE7T_AL	114.5	116.6	113.6	115.5		115.1	1.36	7.4	1.3		114.6	1.28	6.5	2.2	16	AK	
W33XFL	123.0 *	117.3	120.3 *	111.9		118.1	2.26 *	7.9	4.8		118.7	2.64 *	8.8	3.8	15	TB	
WGNDGZ	106.3	109.4	112.4	105.4		108.4	-0.60	8.9	3.2		105.0	-1.89	8.8	3.3	16	TP	
Y2JXA2	117.0	114.5	117.1	117.7		116.6	1.80	9.2	1.4		113.9	1.04	8.5	3.8	16	LA	
ZQBUAW_AL	118.6	120.6 *	120.4 *	119.0		119.7	2.71 *	8.7	1.0		114.6	1.26	9.0	6.2	16	AK	
ZUF98M_AL	108.6	113.4	105.9	112.7		110.1	-0.09	10.0	3.5		111.9	0.37	10.2	2.8	16	AK	
ZXXH7M	112.5	107.0	110.0	113.5		110.8	0.09	7.8	2.9		110.4	-0.11	8.6	2.8	12	XX	

Consensus (All Labs) Results														
Wk Mean	111.19	110.20	110.50	110.60		Month Mean	110.44		Grand Mean	110.75				
Avg SDr	9.01	8.18	9.05	8.04		Avg SD	8.82		Avg SD	8.62				
SD btwn Labs	4.85	4.08	4.47	4.66		SD btwn Labs	3.40		SD btwn Labs	3.02				
Labs Incl	63	62	57	60		SD btwn Wks	2.89		SD btwn Wks	3.22				
Labs Excl	0	1	3	0		Labs Incl	60		Labs Incl	61				
Labs not Rcvd	0	0	3	3										



Containerboard Interlaboratory Testing Program  
Analysis 205  
**Bursting Strength (Mullen), 42 lb Linerboard - 42F3**  
TAPPI Official Test Method T807

**Report #621 (F)**  
**June 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 #621 (F)**  
**June 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
2377JN	92.3	91.5	No DATA	No DATA	91.9	-0.18	8.3	0.6	92.1	-0.13	8.3	4.6	6	LC
3LU9DU	87.8	87.5	86.9 H	85.9	87.0	-1.50	8.9	0.8	87.7	-1.63	8.4	1.5	12	XX
3WUMNT	86.4	88.7	84.5	86.7	86.6	-1.62	7.5	1.7	86.6	-2.01 *	7.5	1.7	4	XX
788NYJ	90.2	92.3	92.3	95.9	92.7	0.03	8.9	2.4	92.0	-0.16	7.7	1.9	12	LA
7NPYAJ	89.0	87.4	87.3	98.3	90.5	-0.55	7.3	5.3	91.3	-0.39	7.3	3.2	12	LA
7W3TPL	91.8	89.9	90.4	89.8	90.5	-0.56	5.1	0.9	91.5	-0.34	5.6	1.7	12	TP
8TFVCF_AL	90.8	91.9	95.0	88.2	91.5	-0.29	8.0	2.8	91.2	-0.43	7.4	1.9	12	AL
8ZGV2A_AL	95.8	94.4	93.6	94.9	94.7	0.58	7.1	0.9	95.5	1.03	7.6	1.5	12	AL
AE6Y7J	102.5 *H	94.9	102.7 *	100.5 H	100.2	2.06 *	11.8	3.6	95.9	1.15	9.8	4.2	12	AX
BMFKUD_AL	100.3	98.6	91.9	96.8	96.9	1.17	8.3	3.6	97.4	1.69	7.4	4.0	12	AL
CANDAG	100.1	88.9	102.6 *H	99.9	97.9	1.44	8.7	6.1	93.8	0.45	7.1	4.6	12	AC
CGTZCJ	90.4	95.0	93.2	96.2	93.7	0.31	8.0	2.5	93.6	0.39	7.8	3.1	12	AH
CGTZCJ_AL	97.6	92.1	97.1	94.0	95.2	0.72	7.3	2.6	92.4	-0.04	7.0	4.0	12	AL
CVRWM4	93.6	92.4	92.8	99.0	94.5	0.51	8.0	3.1	91.6	-0.29	11.0	3.7	12	AH
D6XA86	97.2	92.1	90.2	92.3	93.0	0.11	9.4	3.0	92.1	-0.11	8.7	1.9	12	LA
DEJDE6	87.6	88.9	89.4	89.5	88.8	-1.01	5.3	0.9	89.6	-0.97	6.6	1.5	12	LB
DYARQ9	95.2	99.6	98.5	98.4	97.9	1.46	5.9	1.9	96.5	1.36	6.2	1.8	12	AH
EAJN9G	88.6	81.6 *	83.3 *	80.9 *	83.6	-2.43 *	7.1	3.5	83.5	-3.07 X	7.2	2.8	8	LA
ECBH97	96.0 L	96.3	101.9	97.4	97.9	1.45	5.4	2.7	97.8	1.82	6.7	3.1	8	LC
F69VUC	87.4	90.8 L	86.5	88.8	88.3	-1.14	4.4	1.9	88.7	-1.29	3.5	1.9	12	LA
G9ZJPA_AL	93.5	92.3	88.8	89.6	91.1	-0.41	5.6	2.2	90.0	-0.86	7.8	2.3	12	XX
GEQWPC	91.4 H	93.7	88.5	89.7	90.8	-0.46	9.6	2.3	91.1	-0.47	9.4	2.6	12	LJ
GNFGUA	88.5	90.6	90.4	88.0	89.4	-0.86	8.0	1.3	88.7	-1.28	8.3	2.2	12	LA
H3BDH2	93.9	95.0	No DATA	No DATA	94.4	0.51	6.5	0.7	92.8	0.12	6.0	2.3	6	LC
H3BDH2_AL	94.2	93.9	No DATA	No DATA	94.0	0.40	11.3	0.2	90.9	-0.52	13.5	6.7 H	6	AL
H7TLU8	88.2	87.2	93.1	94.0	90.6	-0.52	7.3	3.4	91.4	-0.37	7.0	2.8	12	LA
H7TLU8_AL	92.0	92.0	93.1	95.5	93.2	0.16	6.3	1.7	93.3	0.26	5.7	1.7	12	AL
HMWVXD	94.0 L	97.6	93.6	96.6	95.5	0.78	4.6	2.0	95.8	1.12	4.4	3.3	12	AX
HMWVXD_A	90.6	93.9	90.5	94.5	92.4	-0.05	6.7	2.1	93.2	0.23	7.1	2.1	12	AL
HNBKY6_AL	93.6	91.8	86.9	86.5	89.7	-0.78	7.5	3.5	93.2	0.24	9.3	6.1	12	AL
HXFJHE	92.4	81.8 *	88.0	83.6 *	86.4	-1.65	8.2	4.8	87.2	-1.80	8.5	2.8	12	LA
JAUNJ9	97.5 L	93.5	96.3	89.0	94.1	0.41	8.0	3.7	93.5	0.33	7.9	3.2	8	LC
JHHQC4	88.8 L	88.1 L	86.6	88.6	88.0	-1.23	4.0	1.0	88.3	-1.41	4.2	1.2	12	XX
JTFRP8	97.6	96.1	94.1	92.3	95.0	0.67	9.6	2.3	95.0	0.87	9.6	2.3	4	LC
JTFRP8_AL	97.1	95.8	97.8	95.6	96.6	1.08	7.5	1.1	96.6	1.39	7.5	1.1	4	XX



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

**Report #621 (F)**  
**June 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	
JTXUL9_AL	90.9 H	89.4	102.0 H	67.2 XH	87.4	-1.40	13.4	14.6 H	90.5	-0.67	10.7	8.8 H	12	AL
K4TCNU	91.8 L	91.0	91.3	92.0	91.5	-0.28	4.4	0.5 L	91.0	-0.50	4.6	0.7 L	8	LJ
KBVCB4_AL	92.3	93.1	92.5	94.0	93.0	0.12	5.7	0.8	92.5	-0.01	6.1	1.3	12	XX
KHG8C8_AL	89.3	95.0	92.8	91.4	92.1	-0.11	9.8	2.4	92.9	0.16	8.5	3.3	12	AL
KNZGC4	93.0 L	93.7 L	92.8 L	93.1 L	93.2	0.16	2.4	0.4 L	93.4	0.32	2.8	0.6 L	12	LA
L2PRN2	89.0	83.7 *H	91.6	94.2 H	89.6	-0.79	17.0	4.5	89.7	-0.96	11.8	2.9	12	LA
M63Z3Q	91.8	91.6	90.7	85.2	89.8	-0.74	8.2	3.1	90.3	-0.74	8.2	3.5	12	LA
M6H8DZ	96.4	97.9	97.2	92.1	95.9	0.90	7.9	2.6	96.7	1.42	8.7	2.4	8	TB
M7DQF2_AL	89.2	86.7	88.0	86.2	87.5	-1.36	7.9	1.4	91.4	-0.37	7.9	3.3	12	AL
NKQL94	82.7 *	85.5	90.8	87.3	86.6	-1.62	6.8	3.4	86.1	-2.16 *	7.6	2.9	12	AH
PCGE9T_AL	93.1	96.2	95.3	90.7	93.8	0.34	6.1	2.5	96.5	1.36	7.8	4.8	12	AL
PEE7QQ	93.0	96.9	93.7	93.9	94.4	0.49	6.3	1.7	94.1	0.55	7.0	2.4	12	LC
QU9TVX	92.2	86.8	86.2	91.0	89.1	-0.95	8.9	3.0	91.0	-0.51	8.3	2.9	12	AH
REXKHZ_AL	94.6	88.3	95.6	94.1 L	93.1	0.16	6.3	3.3	93.5	0.35	6.2	2.0	12	AL
RKHH99	92.5	86.6	90.9	88.3	89.6	-0.81	9.5	2.6	90.4	-0.72	9.2	2.3	12	LA
RLUFFY	96.6	96.8	100.8	97.6 L	98.0	1.46	4.7	1.9	97.9	1.84	5.1	2.2	12	AH
TFHZYL	92.6 L	89.9	96.3	93.8	93.2	0.16	4.1	2.7	90.4	-0.72	5.1	2.8	12	LA
TVUEEY	91.6	90.7	91.5	91.4	91.3	-0.34	5.8	0.4 L	91.1	-0.48	5.9	0.9	12	AH
TVZGGP	91.7	88.2	92.8	91.1	90.9	-0.44	7.7	2.0	92.1	-0.14	7.8	2.2	10	LZ
UYUX7P	90.1	90.9	91.8	88.4	90.3	-0.61	5.4	1.5	90.6	-0.63	5.1	2.1	12	LA
V7NE7T_AL	101.5 *	99.0	95.9	97.0	98.4	1.57	5.5	2.5	97.7	1.77	6.3	3.3	12	AK
W33XFL	98.0 H	94.0	99.0	102.7 *	98.4	1.59	10.1	3.6	97.8	1.82	9.0	4.8	12	TB
WGNDGZ	94.6	92.4	95.8	89.9	93.2	0.16	8.7	2.6	90.7	-0.62	8.5	3.5	8	TP
Y2JXA2	101.2 *	99.6	101.0	99.7	100.4	2.12 *	7.9	0.9	97.8	1.80	8.4	2.3	12	LA
ZQBUAW_AI	101.5 *	92.4	99.7	97.0	97.6	1.37	9.7	3.9	92.7	0.07	8.3	4.4	12	AK
ZUF98M_AL	90.3	89.7	93.2	93.7	91.7	-0.23	8.3	2.0	92.8	0.11	7.7	1.9	12	AK
ZXXH7M	92.5	95.0	96.0	93.0	94.1	0.43	9.1	1.7	91.5	-0.32	9.0	4.0	12	XX

Consensus (All Labs) Results														
Wk Mean	93.02	91.92	93.10	92.51	Month Mean	92.55			Grand Mean	92.48				
Avg SDr	7.91	8.34	7.76	7.29	Avg SD	7.91			Avg SD	7.76				
SD btwn Labs	4.09	4.12	4.66	4.58	SD btwn Labs	3.69			SD btwn Labs	2.94				
Labs Incl	62	62	59	58	SD btwn Wks	3.19			SD btwn Wks	3.18				
Labs Excl	0	0	0	1	Labs Incl	62			Labs Incl	61				
Labs not Rcvd	0	0	3	3										



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

**Report #621 (F)**  
**June 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 - 42F3**  
 TAPPI Official Test Method T822

**Report #621 (F)**  
**June 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	
2377JN	86.7 H	95.5 L	91.4	92.2	91.4	0.14	5.9	3.6	93.8	0.84	5.2	2.8	16	MB
7NPYAJ	88.4	89.9	89.2	92.4	90.0	-0.49	2.4	1.7	90.8	-0.37	2.7	1.4	16	LD
7W3TPL	91.2	91.1	90.8	91.8	91.2	0.04	3.8	0.4	91.8	0.02	4.1	1.0	16	TJ
8KMK3K	93.2	87.4	89.6	89.8	90.0	-0.47	3.0	2.4	87.8	-1.57	3.4	2.2	16	TH
8TFVCF	94.4	91.6	95.0	92.9	93.5	1.02	2.5	1.5	92.7	0.40	2.9	1.3	16	LD
8YN33K	99.9 X	97.0	100.4 *	98.2 *	98.9	3.36 X	2.7	1.6	98.3	2.61 *	3.3	1.7	16	EX
8ZGV2A	99.6 X	93.8 H	92.6	92.3 H	94.6	1.50	7.1	3.4	95.1	1.36	5.5	2.5	12	LC
9428DK	90.0	91.4	90.5	93.1 L	91.2	0.06	2.4	1.4	91.3	-0.15	2.8	1.6	16	LD
9BCHGJ	92.2	85.7	89.6	89.8	89.3	-0.77	3.7	2.7	87.7	-1.58	3.6	2.7	8	TH
AE6Y7J	86.2	84.0 *	83.7 *	87.7	85.4	-2.47 *	4.1	1.9	88.8	-1.16	4.1	3.0	16	LD
D6XA86	91.7	93.1	95.2	94.5	93.6	1.08	2.7	1.6	94.6	1.13	3.1	1.4	16	LZ
DBD4X8	88.2	87.5	88.0	86.8	87.6	-1.51	2.4	0.6	88.1	-1.43	2.6	1.6	16	LC
DBGLV7	76.6 X	77.3 X	77.8 X	75.9 X	76.9	-6.17 X	3.4	0.8	75.6	-6.44 X	3.4	1.8	16	EM
DEJDE6	92.9	96.2	95.5 L	94.9	94.9	1.63	2.5	1.4	93.7	0.77	2.6	1.5	12	LC
DYARQ9	89.8	91.0	90.6	92.5	91.0	-0.07	2.3	1.1	91.4	-0.11	2.5	1.4	16	LG
ECBH97	92.8	86.8	89.6	91.4	90.2	-0.42	3.2	2.6	90.4	-0.53	2.7	2.0	16	LC
F69VUC	91.6 L	91.4	91.5 L	91.4	91.5	0.16	1.7	0.1 L	91.9	0.07	2.4	0.6 L	16	LZ
FM3KYD	88.0	91.9	89.7	91.1	90.2	-0.41	3.5	1.7	87.6	-1.64	3.4	5.3	16	LZ
H3BDH2	92.3	93.0	93.9	94.4	93.4	0.99	2.2	1.0	93.0	0.52	2.6	1.1	8	LD
H7TLU8	89.6	91.0	91.4	91.4	90.8	-0.12	2.6	0.8	90.5	-0.48	2.5	1.0	16	LD
HNBKY6	85.3 *	78.9 X	72.4 XH	78.9 X	78.9	-5.31 X	5.3	5.3 H	77.6	-5.64 X	6.5	10.7 H	16	LC
JAUNJ9	92.0	92.9	95.3	91.5	92.9	0.78	3.8	1.7	94.2	0.98	5.1	4.6	16	LD
JHHQC4	90.5 H	90.0	85.7	83.4 X	87.4	-1.61	5.3	3.4	82.1	-3.83 X	4.8	5.5	16	LD
JTFRP8	90.7	85.5	79.8 X	87.3	85.8	-2.30 *	3.5	4.6 H	89.2	-1.02	3.4	5.0	8	LD
JTXUL9	92.6	94.9	93.8	94.1	93.9	1.19	4.0	1.0	90.1	-0.63	3.7	3.5	16	LC
K4TCNU	91.7	91.5	91.8	91.2	91.6	0.20	2.4	0.3 L	91.8	0.04	2.5	0.3 L	12	LD
KBVCB4	94.1	96.7	93.4	89.1	93.3	0.97	3.1	3.1	91.9	0.05	4.5	2.4	16	LZ
KNZGC4	93.3	94.6	93.9	93.5	93.8	1.18	3.0	0.6	93.5	0.73	2.7	0.4 L	16	LD
L2PRN2	91.4	90.9	92.1	90.3	91.2	0.03	2.8	0.8	92.5	0.30	2.4	1.1	16	LD
M63Z3Q	87.1	89.9	93.0	88.7	89.7	-0.63	3.0	2.5	92.5	0.32	2.8	2.4	16	LD
M6H8DZ	91.3	93.7	85.5 H	92.1 H	90.7	-0.20	5.3	3.6	91.7	-0.02	4.7	3.3	16	LD
M7DQF2	91.3	92.1 L	92.6	91.9 L	92.0	0.37	1.8	0.6	91.0	-0.30	2.2	1.2	16	LD
NA8YBV	87.8	88.1	89.2	92.8	89.5	-0.72	3.1	2.3	95.1	1.33	3.3	4.5	16	TH
NKQL94	91.3	88.4	89.2	88.6	89.4	-0.74	3.1	1.3	88.3	-1.37	3.2	2.5	16	LD
PB246U	87.8 H	83.5 *H	99.4 *	87.0 H	89.4	-0.74	6.7	6.9 H	92.1	0.14	5.1	6.6 H	15	MB





**Containerboard Interlaboratory Testing Program**  
 Analysis 215  
**Ring Crush, 42 lb Linerboard - 42F3**  
 TAPPI Official Test Method T822

**Report #621 (F)**  
**June 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	
PEE7QQ	94.3	90.7	91.4	92.5	92.2	0.49	2.9	1.6	92.6	0.34	2.8	1.6	16	LD
QU9TVX	93.3	94.4	93.9	92.1	93.4	1.00	2.6	1.0	93.4	0.65	2.8	1.0	16	LC
RKHH99	88.1	92.9	92.9	92.6	91.6	0.21	3.9	2.4	89.5	-0.90	6.4	11.2 H	16	LD
TFHZYL	89.3 L	88.8	90.8	89.5	89.6	-0.67	2.8	0.9	90.4	-0.53	3.2	1.7	16	TU
TQZHRT	92.5	93.0	94.5	93.9	93.4	1.01	2.7	0.9	93.1	0.55	2.9	2.1	16	TH
TVZGGP	89.0	89.5	90.0	90.0	89.6	-0.65	2.8	0.5	90.0	-0.69	2.8	1.1	14	LC
U84BXT	93.2	93.1 L	93.9 L	93.5 L	93.4	1.01	1.5	0.4	92.9	0.46	1.5	0.8 L	16	MB
UYUX7P	89.3	91.7	90.6	90.9	90.6	-0.23	1.8	1.0	89.7	-0.80	2.7	1.0	16	LD
UZ2DDV	92.9	91.6	93.1	92.8	92.6	0.63	3.1	0.7	92.3	0.24	2.9	1.7	16	LD
V7NE7T	91.7	94.9	93.8	94.5	93.7	1.13	2.6	1.4	93.7	0.78	2.7	1.4	16	LD
VQ9DA3	89.0 L	89.1 L	89.6 L	89.4 L	89.3	-0.80	1.3	0.3 L	90.3	-0.58	1.5	1.2	16	RS
W33XFL	102.3 X	94.7	100.1 *	97.6 *	98.7	3.28 X	3.5	3.3	96.7	2.00 *	3.8	3.1	16	LX
WGNDGZ	96.4 *	95.9	94.2	94.8	95.3	1.83	3.2	1.0	97.6	2.33 *	3.0	3.9	16	LD
XNG66J	96.2 *	88.7 H	92.2 H	94.8 H	93.0	0.81	9.4	3.3	92.5	0.30	8.6	5.0	16	TU
Y2JXA2	105.0 X	105.1 X	105.6 X	105.6 X	105.3	6.17 X	3.4	0.3 L	104.6	5.12 X	3.5	1.5	16	LD
YQFUWQ	84.9 *L	90.0	86.9 L	90.0	88.0	-1.37	2.0	2.5	88.4	-1.34	2.3	1.4	16	EM
ZQHP7P	90.3	84.7 *	88.8	89.1	88.2	-1.24	3.2	2.4	88.6	-1.23	3.0	1.5	16	EN
ZUF98M	88.7	92.3	88.9	87.3	89.3	-0.79	2.5	2.1	89.7	-0.81	2.8	1.9	16	LD

Consensus (All Labs) Results													
Wk Mean	90.75	91.16	91.81	91.67	Month Mean	91.11		Grand Mean	91.72				
Avg SDr	3.40	3.57	3.81	3.50	Avg SD	3.60		Avg SD	3.55				
SD btwn Labs	2.65	3.29	3.38	2.56	SD btwn Labs	2.30		SD btwn Labs	2.51				
Labs Incl	48	50	49	49	SD btwn Wks	2.19		SD btwn Wks	3.02				
Labs Excl	5	3	4	4	Labs Incl	48		Labs Incl	49				
Labs not Rcvd	0	0	0	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

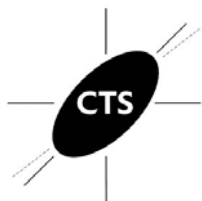
Report #621 (F)

June 2021

Ring Crush, 35 lb Linerboard - 35E2

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	
2377JN	81.1	83.6	81.9	81.3	82.0	0.39	3.9	1.1	84.8	1.32	4.1	3.7	12	MB
7NPYAJ	76.8	77.3	76.7	78.4	77.3	-0.90	3.7	0.8	80.4	-0.35	3.5	2.5	12	LD
7W3TPL	77.4	79.7	78.9	81.4	79.4	-0.33	4.2	1.7	80.0	-0.51	4.3	1.7	12	TJ
8KMK3K	78.1	74.9	77.8	77.8	77.2	-0.94	3.9	1.5	78.6	-1.03	3.8	1.8	12	TH
8TFVCF	84.7	84.5 L	85.5	86.3	85.2	1.28	2.8	0.8	84.0	1.02	3.6	1.3	12	LD
8YN33K	83.9	86.4	84.8 H	87.0	85.5	1.37	5.9	1.4	88.2	2.59 *	5.0	2.4	12	EX
8ZGV2A	88.2 *	86.9	88.7 *	88.4	88.1	2.06 *	5.7	0.8	84.3	1.12	5.0	5.8 H	12	LC
9428DK	76.3	77.7	81.2	80.4	78.9	-0.46	3.3	2.3	81.4	0.04	3.8	3.7	12	LD
9BCHGJ	78.1	74.9	77.8	77.8	77.2	-0.94	3.9	1.5	77.2	-1.57	3.9	1.5	4	XX
AE6Y7J	73.9 *	79.9	82.5	75.8	78.0	-0.70	3.7	3.9	81.0	-0.11	3.9	3.2	12	LD
D6XA86	84.2	85.4	84.4	84.3	84.5	1.09	3.7	0.6	85.4	1.54	3.6	1.6	12	LZ
DBD4X8	79.4	79.0	79.6	79.0	79.3	-0.36	3.8	0.3 L	80.3	-0.39	3.4	1.1	12	LC
DBGLV7	66.9 X	72.5	69.1 X	67.9 X	69.1	-3.15 X	4.6	2.4	67.7	-5.13 X	4.5	1.9	12	EM
DEJDE6	85.1	86.0	85.3	86.0	85.6	1.38	3.3	0.4	82.6	0.48	3.7	3.6	12	LC
DYARQ9	85.6	80.9	82.7	82.8	83.0	0.67	2.8	1.9	83.5	0.83	2.8	1.6	12	LG
ECBH97	78.0	76.2	77.4	76.5	77.0	-0.97	3.6	0.8	77.8	-1.33	3.5	1.7	12	LC
F69VUC	82.4	82.3 L	82.4	82.0	82.3	0.47	2.2	0.2 L	82.5	0.45	3.7	0.4 L	12	LZ
FM3KYD	82.0	78.7	81.0	81.0	80.7	0.03	3.3	1.4	80.2	-0.43	3.7	5.5	12	LZ
H3BDH2	80.1	80.5	82.9	81.7	81.3	0.20	3.7	1.3	80.7	-0.22	3.9	1.7	8	LD
H7TLU8	79.8	80.4	79.1	80.3	79.9	-0.19	3.0	0.6	80.6	-0.28	3.3	1.6	12	LD
HNBKY6	72.8 *	70.7 *	64.3 XH	77.4	71.3	-2.55 *	5.1	5.4 H	73.0	-3.13 X	6.9	10.6 H	12	LC
JAUNJ9	83.4	82.6	83.6	87.2 H	84.2	1.00	4.2	2.1	84.0	1.01	4.1	1.7	8	LD
JHHQC4	76.0	73.1 H	69.9 X	70.3 *	72.3	-2.27 *	5.9	2.8	70.2	-4.21 X	4.8	2.8	12	LD
JTFRP8	77.7	75.6	71.3 *L	76.4	75.3	-1.46	2.4	2.8	75.3	-2.29 *	2.4	2.8	4	LD
JTXUL9	80.9	79.6	78.8	79.2	79.6	-0.26	4.7	0.9	78.5	-1.06	4.2	4.0	12	LC
K4TCNU	82.5	82.2	82.3	82.4	82.3	0.49	2.4	0.1 L	82.5	0.45	2.3	0.2 L	8	LD
KBVCB4	83.4	85.7	79.0	79.9	82.0	0.39	3.4	3.1	81.7	0.15	3.8	2.4	12	LZ
KNZGC4	83.4	83.7	83.5	83.6	83.6	0.82	2.9	0.1 L	83.6	0.85	2.7	0.2 L	12	LD
L2PRN2	84.2	83.8	82.4	82.2	83.1	0.70	3.0	1.0	83.0	0.65	2.9	0.7 L	12	LD
M63Z3Q	80.5	81.5	82.4	80.5	81.2	0.18	3.5	0.9	83.0	0.64	3.3	1.8	12	LD
M6H8DZ	82.5	77.9	73.5 *H	84.1	79.5	-0.29	6.4	4.8 H	81.2	-0.04	6.1	4.4	8	LC
M7DQF2	79.5	80.3	79.8	79.1	79.7	-0.25	3.2	0.5	79.5	-0.70	3.0	0.6 L	12	LD
NA8YBV	76.8	74.1	75.1	77.8	75.9	-1.27	3.5	1.7	80.7	-0.23	4.4	4.5	12	TH
NKQL94	79.6	79.6 L	78.5	79.7	79.4	-0.33	2.7	0.6	78.7	-0.99	2.9	1.1	12	LD
PB246U	80.3	74.8 H	81.4	70.6 *H	76.8	-1.04	7.0	5.0 H	78.6	-1.01	6.3	4.9	12	MB



Containerboard Interlaboratory Testing Program

Analysis 217

Report #621 (F)

June 2021

Ring Crush, 35 lb Linerboard - 35E2

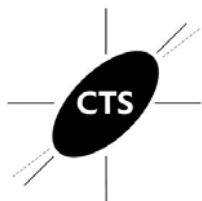
TAPPI Official Test Method T822

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	
PEE7QQ	82.8	83.3	82.4	84.9	83.3	0.76	3.5	1.1	82.6	0.50	3.5	1.9	12	LD
QU9TVX	83.7	84.7	84.4	84.3	84.3	1.02	3.5	0.4	84.4	1.18	3.2	1.0	12	LC
RKHH99	80.0	79.0	79.6	75.4	78.5	-0.56	4.1	2.1	77.0	-1.63	7.3	8.3	H 12	LD
TFHZYL	78.7	76.3	78.8	77.3	77.8	-0.77	3.1	1.2	80.2	-0.40	3.1	2.2	12	TU
TQZHRT	80.1	83.3	81.3	82.0	81.7	0.31	3.6	1.4	83.0	0.64	3.2	1.3	12	TH
TVZGGP	77.3	76.1	77.3	78.7	77.3	-0.89	3.5	1.1	78.8	-0.93	3.6	1.6	10	LC
U84BXT	83.2 L	83.7 L	83.2 L	83.3 L	83.3	0.76	1.2	0.3 L	81.8	0.19	1.4	2.8	12	MB
UYUX7P	77.8	79.6	78.6	79.3	78.8	-0.49	2.4	0.8	79.2	-0.81	2.8	1.6	12	LD
UZ2DDV	81.7	81.5	80.4	83.7	81.8	0.34	3.1	1.4	82.0	0.27	3.0	1.4	12	LD
V7NE7T	82.9	83.4	81.6	84.2	83.0	0.68	2.9	1.1	83.6	0.87	3.0	1.8	12	LD
VQ9DA3	79.0 L	79.5 L	79.3 L	79.3 L	79.3	-0.35	1.4	0.2 L	79.3	-0.76	1.2	0.4 L	12	RS
W33XFL	87.6 *	79.2	87.7	89.6 *	86.0	1.50	4.4	4.6 H	85.1	1.42	4.4	4.3	12	LX
WGNDGZ	84.8	84.6	86.1	84.8	85.1	1.24	2.8	0.7	85.3	1.52	2.7	1.5	8	LD
XNG66J	75.8 H	73.0 H	80.9	77.7 H	76.9	-1.02	11.8	3.3	79.1	-0.85	9.6	4.5	10	TU
Y2JXA2	86.9	88.5 *	88.5 *	88.6	88.1	2.08 *	4.8	0.8	90.3	3.39 X	4.5	1.9	12	LD
YQFUWQ	79.9 L	80.5	78.4	79.5	79.6	-0.27	2.2	0.9	80.4	-0.33	3.0	1.7	12	EM
ZQHP7P	79.2	75.9	82.9	81.3	79.8	-0.21	3.8	3.0	81.9	0.22	3.6	2.4	12	EN
ZUF98M	77.5	78.0	74.8	76.1	76.6	-1.10	3.7	1.4	76.8	-1.69	3.3	1.0	12	LD

Consensus (All Labs) Results														
Wk Mean	80.72	80.05	80.96	80.93	Month Mean	80.57			Grand Mean	81.31				
Avg SDr	4.12	4.51	3.88	3.78	Avg SD	4.11			Avg SD	3.97				
SD btwn Labs	3.45	4.14	3.62	4.11	SD btwn Labs	3.64			SD btwn Labs	2.65				
Labs Incl	52	53	50	52	SD btwn Wks	2.04			SD btwn Wks	2.86				
Labs Excl	1	0	3	1	Labs Incl	52			Labs Incl	49				
Labs not Rcvd	0	0	0	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

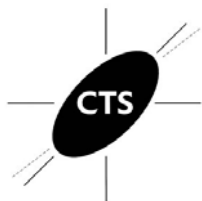
Report #621 (F)

June 2021

STFI, 42 lb Linerboard - 42F3

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		
2377JN	25.0	24.9	No DATA	24.2	H	24.7	0.83	2.1	0.4	24.7	1.01	2.0	0.5	15	LA
2WUGJR	22.8	22.6	22.1	22.1		22.4	-1.03	1.5	0.3	22.9	-0.67	1.7	1.3	16	TT
788NYJ	24.4	23.3	23.5	24.0		23.8	0.10	1.8	0.5	23.9	0.25	1.8	0.5	16	LY
7NPYAJ	22.5	22.7	24.5	22.9	H	23.1	-0.43	2.0	0.9	23.0	-0.58	1.7	0.6	16	LZ
7W3TPL	23.2	23.0	23.6	23.0		23.2	-0.38	1.4	0.3	23.3	-0.32	1.4	0.4	16	TT
8KMK3K	20.8 *	20.4 *	21.0 *	20.1 *		20.6	-2.54 *	1.8	0.4	21.3	-2.14 *	1.9	0.7	16	LZ
8TFVCF_AL	24.8	25.7	23.0	25.1		24.7	0.80	1.7	1.2	24.4	0.78	1.7	1.0	16	AL
8YN33K	30.6 XL	38.3 XL	31.9 XL	30.1 XL		32.7	7.40 X	0.0	3.8 H	31.7	7.57 X	0.0	1.9	16	TT
8ZGV2A_AL	23.9 L	26.0	26.0 *	26.1		25.5	1.49	1.9	1.1	25.8	2.02 *	1.7	0.9	16	AL
9428DK	24.0	24.5	24.8	24.3		24.4	0.60	1.7	0.3	25.1	1.37	1.9	0.7	16	LH
9BCHGJ	20.8 *	20.4 *	23.0	20.1 *		21.1	-2.13 *	1.8	1.3	21.1	-2.40 *	1.8	1.3	4	LZ
AE6Y7J	23.9 L	24.1 L	23.9 L	25.0 L		24.2	0.45	0.6	0.5	24.1	0.43	1.5	0.6	16	LH
BMFKUD_AL	23.5	23.9	23.0	24.9		23.8	0.11	1.9	0.8	23.7	0.04	1.8	0.6	16	AL
CANDAG	22.3	23.4	22.6	22.7		22.8	-0.75	1.5	0.5	22.2	-1.32	1.3	0.5	16	LH
CGTZCJ	24.6	23.6	25.0	23.8		24.3	0.49	1.9	0.7	23.5	-0.11	1.8	1.0	16	LY
CGTZCJ_AL	25.6	23.6 L	24.5	23.1		24.2	0.44	1.4	1.1	24.0	0.34	1.5	1.2	16	AL
CVRWM4	22.8	22.1	22.7	22.4		22.5	-0.97	1.6	0.3	23.0	-0.53	1.6	0.6	16	XX
D6XA86	22.1	22.2	22.9	21.7		22.2	-1.19	1.9	0.5	22.3	-1.27	1.9	0.5	16	LU
DEJDE6	22.8	23.4 L	22.2	22.3		22.7	-0.83	1.4	0.6	22.5	-1.00	1.4	0.4	12	LW
DYARQ9	23.4	23.0	23.4	22.1		22.9	-0.60	1.5	0.6	22.7	-0.89	1.7	0.4	16	LU
EAJN9G	44.5 XL	44.1 XL	45.8 XL	44.8 XL		44.8	17.23 X	0.0	0.7	44.5	19.60 X	0.0	0.6	8	LH
ECBH97	25.3	24.4	24.4	24.3		24.6	0.76	1.2	0.5	24.4	0.77	1.3	0.5	16	LA
FM3KYD	25.2 L	25.3 L	25.0	24.2 L		24.9	1.00	1.2	0.5	24.7	1.05	1.4	1.8	16	LZ
G9ZJPA_AL	24.3	25.5 H	25.0	23.7 L		24.6	0.78	2.0	0.8	85.9	58.47 X	6.7	99.2 H	16	XX
GEQWPC	27.2 *H	26.6 *	26.4 *	26.1		26.6	2.37 *	2.2	0.5	26.8	2.99 X	2.2	0.4	16	LH
H3BDH2	22.9	23.4	23.2	23.4		23.2	-0.37	1.7	0.3	23.1	-0.53	1.7	0.4	8	LA
H3BDH2_AL	23.0	23.2	23.3	23.5		23.2	-0.35	1.5	0.2	23.3	-0.30	1.6	0.4	8	AL
H7TLU8_AL	23.0	23.7	23.6	22.9		23.3	-0.31	1.6	0.4	23.2	-0.37	1.7	0.5	16	AL
HMWVXD	25.1	24.8	25.8	25.0		25.2	1.23	1.8	0.4	25.2	1.47	1.7	0.8	15	LU
HMWVXD_A	24.3	24.6	23.1	23.7		23.9	0.22	1.3	0.7	24.0	0.41	1.5	0.6	16	AL
HNBKY6_AL	19.7 X	20.7 *L	19.1 X	22.8 H		20.6	-2.53 *	1.5	1.6 H	22.4	-1.17	1.2	1.6	16	AL
HXFJHE	22.6	25.5	23.2	25.5		24.2	0.44	1.9	1.5	24.4	0.70	2.1	1.3	16	LH
JAUNJ9	24.8	24.6	23.9	24.1		24.4	0.56	1.7	0.4	24.7	1.02	1.8	1.1	16	LA
JTFRP8	17.7 X	19.1 X	16.3 X	17.4 X		17.6	-4.93 X	1.4	1.1	16.5	-6.64 X	1.8	1.8	8	LZ
JTFRP8_AL	40.1 XL	38.8 XL	36.5 XL	38.8 XL		38.5	12.14 X	0.0	1.5	40.0	15.38 X	0.0	2.0	8	AL



Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F3

TAPPI Official Test Method T826

Report #621 (F)

June 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							
JTXUL9	25.1	24.4	23.1	25.9	L	24.6	0.78	1.7	1.2	25.3	1.54	1.8	4.6	H	16	LU				
KBVCB4_AL	22.9	22.6	23.0	23.2		22.9	-0.60	1.8	0.3	23.1	-0.46	1.8	0.9		16	AL				
KNZGC4	23.9	23.6	23.8	23.8		23.8	0.09	2.0	0.1	23.8	0.14	1.9	0.1	L	16	LA				
L2PRN2	22.9	23.2	23.3	23.3		23.2	-0.42	1.3	0.2	22.6	-0.97	1.4	0.5		16	LA				
L3CEUA	24.4	24.5	24.0	24.0		24.2	0.44	1.8	0.3	23.9	0.29	1.8	0.4		16	LU				
M63Z3Q	22.3	25.5	27.6	X	22.4	24.5	0.64	1.6	2.6	H	23.6	0.02	1.7	1.4	16	LY				
M6H8DZ	27.1	*	24.3	23.9	24.2	24.9	0.98	1.9	1.5	24.0	0.38	1.9	1.0	16	LW					
M7DQF2_AL	23.2	23.7	23.7	23.5		23.5	-0.13	1.2	0.2	23.4	-0.23	1.4	0.7	16	AL					
M92BXQ	26.0	24.4	24.3	25.1		25.0	1.04	1.8	0.8	25.0	1.31	1.8	1.0	16	LA					
MVDAFY	23.6	24.3	24.6	24.2		24.2	0.40	1.5	0.4	23.9	0.27	1.7	0.7	16	XX					
NA8YBV	40.5	X	39.3	XH	41.6	XH	38.1	XH	39.9	13.22	X	2.9	1.5	41.9	17.17	X	2.9	1.9	16	TT
NKQL94	23.2	22.6	22.6	22.6		22.8	-0.75	1.6	0.3	22.5	-1.06	1.6	0.5	16	LU					
PB246U	22.4	23.7	23.1	24.5		23.4	-0.19	1.8	0.9	23.8	0.18	1.7	1.0	15	LA					
PCGE9T_AL	22.4	21.8	22.6	23.0		22.4	-1.01	1.9	0.5	22.4	-1.09	1.7	0.7	16	AL					
PEE7QQ	22.6	22.5	22.3	23.3		22.7	-0.82	1.7	0.4	23.1	-0.50	1.7	0.7	16	LA					
PF9WW6	25.6	26.0	25.3	25.0		25.5	1.46	1.4	0.4	25.7	2.00	*	1.5	0.5	16	LH				
QU9TVX	23.5	22.5	22.1	22.7		22.7	-0.81	1.8	0.6	22.9	-0.66	1.6	0.4	16	LU					
REXKHZ	24.1	23.5	22.6	H	24.7	23.8	0.07	2.1	0.9	23.9	0.26	2.0	1.0	16	LU					
RLUFFY	26.5	*	25.9	26.4	*	26.6	*	26.4	2.21	*	1.6	0.3	26.2	2.38	*	1.8	0.6	16	LU	
RWCYZV	23.3	22.5	L	22.2	L	22.1	22.5	-0.93	1.3	0.5	22.7	-0.87	1.7	0.6	16	LW				
TVUEEY	23.7	23.4	23.6	24.0		23.6	-0.02	1.2	0.3	23.3	-0.31	1.3	0.4	16	TT					
TVZGGP	24.3	24.0	24.0	24.6		24.2	0.44	1.7	0.3	24.1	0.44	1.7	0.4	14	LY					
UYUX7P	22.9	L	23.6	L	23.0	23.2	23.2	-0.40	1.1	0.3	23.2	-0.42	1.1	0.4	16	BK				
V7NE7T_AL	22.8	24.2	22.5	24.1	H	23.4	-0.22	1.8	0.9	23.6	0.02	1.6	0.7	16	AK					
XNG66J	24.4	H	25.9	25.0	23.9	24.8	0.92	2.2	0.9	24.2	0.53	1.9	0.9	16	LA					
ZQBUAW_AL	25.2	24.2	25.5	23.4		24.6	0.74	1.8	0.9	24.4	0.72	1.6	1.0	16	AK					
ZQHP7P	22.2	21.8	21.4	21.6		21.7	-1.58	1.5	0.3	22.0	-1.51	1.6	0.6	16	LY					
ZUF98M_AL	23.5	23.3	22.4	22.7		23.0	-0.55	1.4	0.5	23.1	-0.47	1.6	0.4	16	AK					

Consensus (All Labs) Results									
Wk Mean	23.76	23.74	23.61	23.64	Month Mean	23.67	Grand Mean	23.61	
Avg SDr	1.69	1.73	1.66	1.62	Avg SD	1.68	Avg SD	1.67	
SD btwn Labs	1.37	1.37	1.21	1.32	SD btwn Labs	1.23	SD btwn Labs	1.07	
Labs Incl	57	58	55	58	SD btwn Wks	0.77	SD btwn Wks	1.01	
Labs Excl	6	5	7	5	Labs Incl	58	Labs Incl	56	
Labs not Rcvd	0	0	1	0					

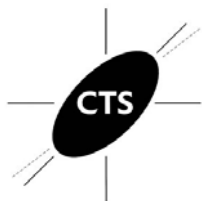


Containerboard Interlaboratory Testing Program  
Analysis 223  
**STFI, 42 lb Linerboard - 42F3**  
TAPPI Official Test Method T826

**Report #621 (F)**  
**June 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

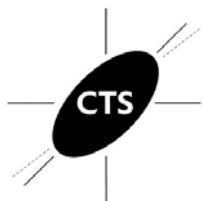
Report #621 (F)

June 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										
2377JN	24.8	24.6	No DATA	22.2	L	23.9	0.72	1.5	1.4	24.2	1.16	1.3	1.1	11	LA								
2WUGJR	21.0	20.7	20.3	20.0	*	20.5	-2.36	*	1.4	0.4	23.2	0.12	1.8	2.1	H	12	TT						
788NYJ	23.4	23.3	23.4	23.4		23.4	0.28	1.5	0.1	L	23.4	0.33	1.4	0.6	12	LU							
7NPYAJ	21.6	22.3	21.4	23.0		22.1	-0.91	1.8	0.7		22.1	-0.98	1.7	0.5	12	LZ							
7W3TPL	22.5	21.9	L	22.7		22.5	-0.57	1.4	0.4		22.8	-0.31	1.4	0.3	12	TT							
8KMK3K	22.0	21.3	20.6	22.0		21.5	-1.48	2.0	0.7		21.8	-1.35	1.8	0.6	12	LZ							
8TFVCF_AL	25.4	25.6	24.2	24.0	H	24.8	1.57	2.1	0.8		24.4	1.36	2.0	0.9	12	AL							
8YN33K	28.9	XL	28.3	XL	31.6	XL	28.5	XL			29.3	5.69	X	0.0	1.5	H	29.9	6.94	X	0.0	1.2	12	TT
8ZGV2A_AL	24.2	23.0	24.2	24.2		23.9	0.75	1.9	0.6		23.9	0.85	1.4	0.9	12	AL							
9428DK	22.8	25.4	23.5	24.4	L	24.0	0.87	1.6	1.1		24.7	1.65	1.8	1.0	12	LH							
9BCHGJ	22.0	21.3	19.6	*	23.0		21.5	-1.48	2.0	1.5	21.5	-1.60	1.7	1.0	8	LZ							
AE6Y7J	23.4	23.9	24.1	24.4	L	23.9	0.77	1.2	0.4		23.7	0.64	1.5	0.5	12	LH							
BMFKUD_AL	23.2	23.4	23.5	24.1		23.6	0.43	1.7	0.4		26.3	3.22	X	2.1	9.2	H	12	AL					
CANDAG	21.7	L	23.0	22.1	21.8		22.2	-0.85	1.5	0.6	22.4	-0.74	1.3	0.5	12	LH							
CGTZCJ	23.1	23.0	23.5	22.7		23.1	-0.02	2.0	0.3		23.1	0.06	1.9	1.0	12	LY							
CGTZCJ_AL	25.2	23.0	23.0	23.3		23.6	0.48	1.7	1.1		24.8	1.70	1.7	1.7	12	AL							
CVRWM4	22.3	21.4	22.9	22.4		22.3	-0.74	1.7	0.6		22.7	-0.39	1.7	0.6	12	XX							
D6XA86	22.2	21.8	22.3	21.8		22.0	-0.95	1.8	0.3		22.4	-0.74	1.8	0.6	12	LU							
DEJDE6	22.3	22.6	L	21.9	21.6	L	22.1	-0.90	1.2	0.5	21.9	-1.17	1.4	0.4	12	LW							
DYARQ9	22.0	21.4	21.9	21.4		21.7	-1.30	1.7	0.3		22.2	-0.95	1.7	0.8	12	LW							
EAJN9G	38.6	XL	38.5	XL	39.1	XL	37.6	XL			38.4	14.02	X	0.0	0.6		38.3	15.48	X	14.7	0.6	8	LH
ECBH97	22.8	22.5	23.9	L	22.9		23.0	-0.05	1.1	0.6	23.5	0.45	1.3	0.7	12	LA							
FM3KYD	23.2	24.3	24.3	22.8		23.7	0.53	2.3	0.8		24.0	0.95	1.6	1.8	12	LZ							
G9ZJPA_AL	24.5	25.8	25.2	24.6		25.0	1.77	1.9	0.6		34.3	11.35	X	2.2	7.0	H	12	XX					
GEQWPC	26.3	*	26.9	*	26.4	*	26.0	*			26.4	3.00	X	2.1	0.4		26.3	3.31	X	2.1	0.9	12	LH
H3BDH2	22.6	23.3	23.0	22.5		22.8	-0.24	1.6	0.3		22.9	-0.23	1.7	0.3	8	LA							
H3BDH2_AL	23.3	23.2	21.9	22.9		22.8	-0.22	1.8	0.6		22.8	-0.26	1.8	0.5	8	AL							
H7TLU8_AL	22.5	23.3	22.9	L	22.4		22.8	-0.27	1.5	0.4	22.9	-0.22	1.6	0.4	12	AL							
HMWVXD	24.2	24.3	24.8	24.7		24.5	1.29	2.0	0.2		24.4	1.34	2.1	0.4	12	LU							
HMWVXD_A	23.5	23.2	23.7	22.1		23.1	0.04	1.6	0.7		23.3	0.18	1.6	0.7	12	AL							
HNBKY6_AL	20.2	*L	19.6	*	19.4	*	19.2	XL			19.6	-3.17	X	1.2	0.4		21.6	-1.53	1.1	1.5	12	AL	
HXFJHE	21.3	23.6	H	21.7	24.5		22.8	-0.29	2.2	1.5	H	23.6	0.55	2.1	1.2	12	LH						
JAUNJ9	23.2	24.3	22.5	24.6		23.7	0.52	1.6	1.0		23.8	0.75	1.6	0.8	8	LA							
JTFRP8	17.4	X	16.9	X	14.7	X	17.0	X			16.5	-6.01	X	1.7	1.2		16.5	-6.70	X	1.7	1.2	4	LZ
JTFRP8_AL	33.4	XL	32.4	XL	29.9	XL	33.0	XL			32.2	8.29	X	0.0	1.6	H	32.2	9.23	X	0.0	1.6	4	AL



Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E2

TAPPI Official Test Method T826

Report #621 (F)

June 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	
JTXUL9	24.6	24.8	23.1	23.4	24.0	0.81	1.7	0.9	24.0	0.95	1.9	0.7	12	LU
KBVCB4_AL	23.9	22.1	22.4	22.0 L	22.6	-0.43	1.4	0.9	22.4	-0.73	1.5	1.1	12	XX
KNZGC4	23.0	22.9	23.2	23.1	23.1	-0.03	2.0	0.1	23.1	0.00	1.9	0.1 L	12	LA
L2PRN2	23.0	22.0	23.3	22.9	22.8	-0.26	1.7	0.5	22.6	-0.55	1.6	0.4	12	LW
L3CEUA	23.3	24.1	23.9	24.1	23.9	0.72	1.8	0.4	22.0	-1.10	1.6	2.2 H	12	LU
M63Z3Q	23.1	24.2	25.4	22.0	23.7	0.52	1.6	1.5	23.3	0.16	1.6	0.9	12	LY
M6H8DZ	24.5	24.2 H	23.1	22.9	23.6	0.51	2.1	0.8	23.0	-0.09	1.9	1.0	8	LW
M7DQF2_AL	21.1	22.4	23.9	23.0	22.6	-0.46	1.6	1.1	22.8	-0.25	1.8	0.9	12	AL
M92BXQ	25.2 L	23.9	23.1	23.3 L	23.9	0.71	1.5	0.9	23.6	0.49	1.8	1.1	12	LA
MVDAFY	24.0	23.1	23.6	22.7	23.4	0.26	1.9	0.6	22.8	-0.28	1.6	0.6	12	XX
NA8YBV	34.1 X	31.8 X	34.2 XH	32.7 XH	33.2	9.23 X	2.5	1.1	33.5	10.60 X	2.5	1.2	12	TT
NKQL94	22.7	22.5 H	21.6	21.6	22.1	-0.89	2.0	0.6	22.2	-0.90	2.0	0.5	12	LU
PB246U	21.0	24.1	23.0 H	23.2	22.8	-0.26	2.2	1.3	22.6	-0.50	1.9	0.8	11	LA
PCGE9T_AL	22.3	22.5	22.6	21.9	22.3	-0.71	1.7	0.3	22.0	-1.13	1.6	0.6	12	XX
PEE7QQ	21.7	21.8	22.4	21.4	21.8	-1.18	1.8	0.4	22.2	-0.90	1.7	0.5	12	LA
PF9WW6	25.7 L	26.1 *	25.7	25.0	25.6	2.32 *	1.3	0.5	25.7	2.67 *	1.4	0.4	12	LH
QU9TVX	22.0	22.8	22.3	22.4	22.4	-0.65	1.4	0.3	22.3	-0.76	1.6	0.4	12	LU
REXKHZ	25.1 H	23.8	21.7	23.6	23.6	0.45	2.2	1.4	23.5	0.39	2.0	0.9	12	LU
RLUFFY	25.2	25.6 L	25.6	25.3 *	25.4	2.15 *	1.9	0.2	25.0	1.96 *	2.0	1.0	12	LU
RWCYZV	22.5	21.3	22.3	21.5	21.9	-1.11	1.6	0.6	22.0	-1.10	1.6	0.4	12	LW
TVUEEY	23.0	23.1	22.8	23.2	23.0	-0.05	1.4	0.2	22.8	-0.27	1.3	0.3	12	TT
TVZGGP	23.5	23.0	24.0	23.5	23.5	0.36	2.1	0.4	23.6	0.57	1.8	0.5	10	LZ
UYUX7P	21.4 L	22.1	22.1	21.5	21.8	-1.19	1.1	0.4	22.1	-1.00	1.1	0.6	12	BK
V7NE7T_AL	23.8 L	22.8	23.5	23.0 H	23.3	0.18	2.1	0.5	23.2	0.09	1.9	0.5	12	AK
XNG66J	24.1 H	25.3 H	24.3	24.9	24.6	1.43	2.2	0.6	24.7	1.63	1.9	0.6	12	LA
ZQBUAW_AL	25.8 *	24.5	26.7 *	23.5	25.1	1.87	1.9	1.4	24.5	1.45	1.9	1.1	12	AK
ZQHP7P	21.1	21.1	21.2	21.0	21.1	-1.82	1.7	0.1 L	21.6	-1.48	1.7	0.6	12	LY
ZUF98M_AL	22.5	22.7	22.4	21.8	22.4	-0.66	1.8	0.4	22.2	-0.93	1.7	0.3	12	AK

Consensus (All Labs) Results													
Wk Mean	23.13	23.20	23.05	22.98	Month Mean	23.08		Grand Mean	23.09				
Avg SDr	1.76	1.81	1.70	1.74	Avg SD	1.75		Avg SD	1.69				
SD btwn Labs	1.39	1.45	1.48	1.20	SD btwn Labs	1.10		SD btwn Labs	0.98				
Labs Incl	58	58	57	57	SD btwn Wks	0.75		SD btwn Wks	0.89				
Labs Excl	5	5	5	6	Labs Incl	56		Labs Incl	55				
Labs not Rcvd	0	0	1	0									





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

**Report #621 (F)**  
**June 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 - 42F**  
 TAPPI Official Test Method T575

**Report #621 (F)**  
**June 2021**

WebCode	Monthly Results				Cumulative Results				Inst	
	Mean	CPV	SD		Mean	CPV	SD Months	Months		
2377JN	151.5	0.79	22.50		139.7	0.16	11.03	4	LA	
8ZGV2A_AL	167.7	1.79	31.22	H	158.4	1.55	12.28	4	AL	
BMFKUD_AL	130.5	-0.51	10.66		126.9	-0.79	5.46	4	AL	
CGTZCJ_AL	133.5	-0.32	21.37		135.1	-0.18	2.97	4	AL	
D6XA86	156.6	1.11	7.69		147.5	0.74	8.69	4	EV	
ECBH97	119.0	-1.22	5.87	L	116.0	-1.60	3.11	4	EV	
G9ZJPA_AL	124.9	-0.86	17.06		127.2	-0.77	6.31	4	XX	
GEQWPC	200.8	3.85	27.40	H	225.4	6.53	46.55	H	4	LS
H3BDH2	235.4	6.00	13.16	X	241.5	7.72	8.63	X	2	LA
H3BDH2_AL	149.8	0.69	20.51		154.9	1.29	7.14		2	AL
HMVVXD_A	130.7	-0.50	14.32		125.0	-0.93	4.23		4	AL
HNBKY6_AL	131.2	-0.47	16.65		147.0	0.70	11.98		4	AL
HXFJHE	138.0	-0.05	7.42	L	136.2	-0.10	2.97		4	EV
JAUNJ9	130.9	-0.49	4.33	L	129.2	-0.62	1.96	L	4	LA
JTFRP8	147.1	0.52	16.42		147.1	0.71	0.00		1	LA
JTFRP8_AL	151.6	0.80	19.71		148.1	0.79	4.93		2	AL
JTXUL9	199.6	3.78	15.88	X	153.1	1.15	49.63	H	4	EV
KBVCB4_AL	130.7	-0.50	16.07		126.1	-0.85	4.02		4	XX
KNZGC4	135.1	-0.23	9.21		136.6	-0.07	1.67	L	4	LS
M63Z3Q	155.3	1.03	15.85		149.8	0.91	7.44		4	EV
M6H8DZ	114.8	-1.48	10.15		115.4	-1.65	4.94		4	XX
NKQL94	152.3	0.84	19.87		155.1	1.30	3.24		4	EV
PB246U	132.7	-0.38	15.43		134.6	-0.22	5.87		4	LA
PCGE9T_AL	128.4	-0.64	11.97		127.2	-0.77	5.95		4	AL
REXKHZ	250.1	6.91	15.49	X	165.9	2.11	57.31	H	4	EV
TVZGGP	130.2	-0.53	12.13		134.1	-0.26	2.81		4	LS
V7NE7T	162.8	1.50	26.05		145.6	0.60	12.78		4	EV
VVPPDY	139.4	0.04	16.93		137.2	-0.02	3.12		4	LS
XNG66J	134.5	-0.27	18.99		138.8	0.09	3.67		4	LA
Y2JXA2	115.9	-1.42	16.31		118.5	-1.41	2.46	L	4	EV
ZQBUAW_AL	179.3	2.52	28.43	H	142.1	0.34	25.53		4	AK
ZQHP7P	149.7	0.68	19.53		147.1	0.71	6.69		4	EV
ZUF98M	118.4	-1.26	10.01		120.1	-1.30	3.89		4	LS
ZUF98M_AL	119.6	-1.19	11.58		116.0	-1.60	6.56		3	AK



Containerboard Interlaboratory Testing Program  
Analysis 228  
**Roughness - Stylus Method, 42 lb Linerboard - 42F3**  
TAPPI Official Test Method T575

**Report #621 (F)**  
**June 2021**

Consensus (All Labs) Results			
Month Mean	138.73	Grand Mean	137.54
Avg SD	17.04	Avg SD Months	15.62
SD btwn Labs	16.11	SD btwn Labs	13.46
Labs Incl	30	Labs Incl	32

**Key to Instrument Codes Reported by Participants**

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



**Containerboard Interlaboratory Testing Program**  
 Analysis 229  
**Roughness - Sheffield Method, 42 lb Linerboard - 42F3**  
 TAPPI Official Test Method T538

**Report #621 (F)**  
**June 2021**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
7NPYAJ	352.9	-0.53	8.15	356.2	-0.41	3.94	4	XX
8TFVCF	361.6	0.77	7.68	365.4	0.95	7.97	4	PP
BMFKUD_AL	353.3	-0.47	8.37	353.2	-0.84	3.39	4	AL
CGTZCJ_AL	351.3	-0.77	9.24	350.2	-1.29	6.20	4	AL
DBGLV7	411.5	8.21 X	7.60	406.7	7.05 X	7.84	4	TS
G9ZJPA_AL	348.0	-1.26	6.43	294.2	-9.55 X	116.70 H	4	XX
H3BDH2_AL	353.7	-0.41	7.65	356.4	-0.38	3.82	2	AL
H7TLU8_AL	361.1	0.69	5.69	359.3	0.05	2.03	4	AL
JTFRP8_AL	370.3	2.06 *	15.97 H	370.3	1.68	0.00	1	AL
M7DQF2_AL	362.9	0.96	5.59	371.1	1.79	7.92	4	AL
M92BXQ	363.1	0.99	5.67	362.9	0.58	3.43	4	XX
QU9TVX	354.0	-0.36	7.60	361.0	0.30	7.43	4	XX
V7NE7T	349.4	-1.05	7.68	353.6	-0.79	2.82	4	LA
V7NE7T_AL	348.5	-1.18	9.48	353.3	-0.84	5.61	4	AK
ZQBUAW_AL	360.1	0.54	5.82	353.5	-0.81	4.84	4	AK

Consensus (All Labs) Results			
Month Mean	356.44	Grand Mean	358.94
Avg SD	8.33	Avg SD Months	5.32
SD btwn Labs	6.71	SD btwn Labs	6.77
Labs Incd	14	Labs Incd	13

**Key to Instrument Codes Reported by Participants**

<b>AK</b>	L & W Autoline 300	<b>AL</b>	L & W Autoline 400
<b>LA</b>	L & W Autoline (229 Enrollment)	<b>PP</b>	Technidyne Profile/Plus
<b>TS</b>	TMI Monitor/Smoothness	<b>XX</b>	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 #621 (F)**  
**June 2021**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
8TFVCF	106.2	0.76	3.56	107.1	1.19	1.18	L 4	HY
8ZGV2A	102.0	0.36	7.58	109.0	1.39	8.37	4	SC
94RHYL	81.0	-1.64	1.21	78.8	-1.69	3.20	2	TM
ECBH97	98.8	0.06	5.07	92.3	-0.32	7.01	4	TM
GEQWPC	82.8	-1.47	7.16	82.9	-1.27	2.13	4	TM
H3BDH2	95.0	-0.31	7.78	93.7	-0.17	1.84	2	TM
H7TLU8	95.9	-0.23	5.38	96.1	0.08	3.39	4	TM
HNBKY6	90.4	-0.75	9.96	126.7	3.18	39.76	H 4	SC
HXFJHE	105.0	0.65	7.91	102.4	0.72	3.59	4	SC
JTXUL9	124.2	2.48 *	7.60	91.6	-0.39	22.17	H 4	TM
KBVCB4	99.4	0.11	7.37	110.4	1.53	13.19	4	TM
L2PRN2	114.2	1.53	12.60	111.3	1.61	4.39	4	HY
M63Z3Q	101.3	0.29	7.66	91.0	-0.45	10.42	4	HZ
M7DQF2	40.0	-5.56 X	0.78	40.7	-5.56 X	1.17	L 4	LZ
M92BXQ	86.8	-1.09	1.64	86.6	-0.90	2.06	4	SC
NKQL94	92.8	-0.52	3.42	89.8	-0.57	5.18	4	TM
PEE7QQ	101.4	0.30	8.08	100.3	0.50	3.93	4	HZ
PGLBRT	440.4	32.67 X	69.88	296.9	20.49 X	159.39	H 4	SC
QU9TVX	111.7	1.29	6.11	107.0	1.18	3.94	4	HY
REXKHZ	106.6	0.80	2.97	88.4	-0.71	12.31	4	TM
V7NE7T	85.8	-1.19	4.44	82.1	-1.35	3.38	3	TM
VVPPDY	103.0	0.46	4.80	99.5	0.42	2.68	4	HY
WGNDGZ	102.2	0.38	4.21	101.6	0.64	0.90	L 4	HY
WZDLQN	109.8	1.11	5.36	109.3	1.42	2.14	3	TM
Y2JXA2	87.8	-0.99	1.30	91.1	-0.44	2.58	4	HY
YM4PKQ	90.1	-0.78	1.53	89.5	-0.60	4.18	3	TM
ZQBUAW	90.2	-0.77	5.89	82.4	-1.32	5.48	4	SC
ZUF98M	89.3	-0.85	1.67	90.4	-0.51	2.95	4	TM

Consensus (All Labs) Results			
Month Mean	98.22	Grand Mean	95.37
Avg SD	6.16	Avg SD Months	7.09
SD btwn Labs	10.47	SD btwn Labs	9.84
Labs Incl	26	Labs Incl	25



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

**Report #621 (F)**  
**June 2021**

**Consensus By Method**

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	96.91	10.15	1.31	23
Modified Scott Bond Mechanics	112.96	1.75	14.74	2

**Analysis Notes**

M7DQF2 - 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>LZ</b> L&W (model not specified) <b>TM</b> TMI Monitor/Internal Bond Tester	<b>HZ</b> Huygen Internal Bond Tester with AccuPress <b>SC</b> Scott Internal Bond Tester (Manual)
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Containerboard Interlaboratory Testing Program

Analysis 234

Report #621 (F)

June 2021

COF Inclined Plane (Slide Angle), 42 Ib Linerboard - 42F

TAPPI Official Test Method T815

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SD	Mean	CPV	SD Months	Months
2377JN	23.8	-1.17	1.04	25.1	-1.12	2.04	4
7NPYAJ	27.7	0.05	1.10	29.9	0.79	3.23	4
8TFVCF	31.4	1.21	1.95	31.2	1.31	0.82	4
8ZGV2A	23.2	-1.36	1.30	25.1	-1.15	2.32	4
AE6Y7J	30.1	0.80	2.59	27.2	-0.29	2.49	4
BMFKUD	30.0	0.75	2.69	29.4	0.58	0.72	4
D6XA86	21.6	-1.86	1.14	25.5	-0.97	2.67	4
GEQWPC	27.8	0.08	5.12	24.5	-1.37	2.32	4
H3BDH2	23.8	-1.17	2.17	24.7	-1.29	1.27	2
HNBKY6	30.2	0.83	1.92	31.7	1.50	1.76	4
HXFJHE	29.0	0.45	2.45	29.1	0.48	0.34	L 4
JPJUR3	22.8	-1.49	1.79	22.8	-2.05 *	0.00	1
JTXUL9	31.8	1.33	2.59	30.9	1.19	2.64	4
KBVCB4	30.2	0.83	3.56	29.6	0.66	1.07	4
KHG8C8	33.0	1.71	1.87	32.8	1.95 *	1.98	4
KNZGC4	27.0	-0.17	1.00	27.1	-0.33	0.12	L 4
L2PRN2	33.0	1.71	1.58	31.3	1.35	1.27	4
M63Z3Q	23.2	-1.36	3.40	24.4	-1.41	1.61	4
M6H8DZ	24.2	-1.05	0.84	26.2	-0.69	3.57	4
M7DQF2	28.0	0.14	0.71	28.1	0.05	1.64	4
M92BXQ	28.8	0.39	0.45	L 28.8	0.35	0.16	L 4
NKQL94	27.0	-0.17	2.45	29.2	0.52	1.71	4
PCGE9T	26.6	-0.30	2.70	27.0	-0.37	1.08	4
QU9TVX	28.1	0.17	3.37	26.6	-0.55	2.40	4
REXKHZ	25.0	-0.80	1.58	29.8	0.73	4.21	4
RKHH99	33.0	1.71	2.35	30.3	0.93	5.65	H 4
TVZGGP	29.0	0.45	6.03	H 28.8	0.37	0.68	4
V7NE7T	29.6	0.63	2.65	28.8	0.35	1.35	4
WGNDGZ	25.8	-0.55	5.36	H 25.2	-1.09	2.32	4
ZQBUAW	28.6	0.33	3.71	29.0	0.43	1.19	4
ZQHP7P	24.2	-1.06	3.78	29.1	0.48	3.40	4
ZUF98M	27.2	-0.11	3.11	27.4	-0.23	0.60	4
ZZ7JHL	24.6	-0.92	2.19	25.0	-1.17	0.28	L 4



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

**Report #621 (F)**  
**June 2021**

Consensus (All Labs) Results			
Month Mean	27.55	Grand Mean	27.92
Avg SD	2.77	Avg SD Months	2.21
SD btwn Labs	3.19	SD btwn Labs	2.50
Labs Incl	33	Labs Incl	33

**Key to Instrument Codes Reported by Participants**

ZZ Instruments No Longer Tracked





Containerboard Interlaboratory Testing Program  
Analysis 237

Report #621 (F)  
June 2021

Air Resistance, 42 lb Linerboard - 42F

TAPPI Official Test Method T460

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD	Months	Inst
2377JN	22.2	0.04	2.09	21.6	-0.78	0.62	4	LA
7NPYAJ	21.9	-0.18	2.19	23.4	0.82	1.23	4	GA
8TFVCF	20.7	-1.09	2.93	22.6	0.11	1.67	4	TP
8ZGV2A_AL	19.8	-1.72	2.15	20.9	-1.34	3.33	H 4	AL
9428DK	20.4	-1.30	2.17	21.2	-1.08	0.75	3	XX
BMFKUD_AL	20.7	-1.06	2.17	20.7	-1.51	0.52	4	AL
CGTZCJ_AL	23.5	0.95	1.18	23.1	0.55	0.25	4	AL
D6XA86	19.1	-2.25 *	1.47	18.3	-3.57 X	0.89	4	XX
F69VUC	21.8	-0.27	0.79	L 21.5	-0.85	0.80	4	XX
FBWDA9	20.7	-1.05	1.50	22.0	-0.44	0.87	4	LP
G9ZJPA_AL	22.9	0.51	1.88	22.9	0.37	0.35	4	XX
GEQWPC	26.5	3.15 X	3.14	24.7	1.89	5.70	H 4	TD
H3BDH2	25.1	2.10 *	1.05	25.0	2.14 *	0.12	2	LA
H3BDH2_AL	24.7	1.87	1.69	24.4	1.67	0.44	2	AL
H7TLU8_AL	21.5	-0.50	1.95	21.7	-0.67	0.15	L 4	AL
HMWVXD	23.0	0.60	1.94	22.5	0.04	0.50	4	LA
HMWVXD_AL	21.5	-0.49	1.35	22.5	0.01	0.80	4	AL
HNBKY6_AL	22.9	0.50	1.81	18.9	-3.09 X	8.66	H 4	AL
HXFJHE	23.5	0.93	0.93	23.0	0.47	0.37	4	LP
JAUNJ9	23.1	0.68	0.67	L 23.4	0.76	0.49	4	LA
JHHQC4	23.8	1.18	4.18	H 24.0	1.32	1.07	4	GG
JTFRP8_AL	21.4	-0.58	1.67	21.4	-0.95	0.00	1	XX
JTXUL9_AL	23.2	0.75	1.69	23.5	0.91	0.80	4	AL
KBVCB4_AL	23.2	0.72	1.10	23.1	0.56	0.99	4	XX
KHG8C8_AL	22.2	0.03	2.33	22.6	0.10	0.28	4	AL
KNZGC4	22.2	0.02	1.62	21.8	-0.57	0.29	4	LA
L2PRN2	23.2	0.75	1.81	22.8	0.29	0.50	4	LP
M63Z3Q	23.1	0.67	1.51	22.9	0.33	0.99	4	LP
M6H8DZ	21.3	-0.63	1.70	21.5	-0.82	0.26	4	LP
M7DQF2_AL	24.1	1.37	1.28	23.5	0.88	0.48	4	AL
NGDJL8	24.3	1.54	3.59	H 23.9	1.25	0.84	4	LP
NKQL94	21.8	-0.30	3.13	23.9	1.20	3.07	H 4	GA
PB246U	21.5	-0.46	1.55	21.0	-1.24	0.67	3	XX
PCGE9T_AL	21.7	-0.35	2.16	22.0	-0.37	0.49	4	AL
QU9TVX	22.6	0.32	3.20	22.1	-0.31	0.75	4	TP
REXKHZ_AL	21.1	-0.76	1.87	22.0	-0.39	0.67	4	AL
TCYWEV	20.1	-1.51	3.43	H 20.9	-1.35	1.34	4	GA
TVZGGP	20.4	-1.32	1.11	21.5	-0.83	0.94	4	XX
V7NE7T_AL	20.8	-0.97	1.93	22.3	-0.15	1.05	4	AK



**Containerboard Interlaboratory Testing Program**  
Analysis 237

**Report #621 (F)**  
**June 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
VVPPDY	22.9	0.55	0.61	L	22.6	0.13	0.27	4	LP
XNG66J	23.7	1.14	1.23		23.5	0.86	0.70	4	LA
ZQBUAW_AL	22.0	-0.13	2.19		19.7	-2.36 *	2.14	4	AK
ZUF98M_AL	21.7	-0.33	1.64		21.8	-0.63	0.30	4	AK

Consensus (All Labs) Results				
Month Mean		22.17	Grand Mean	22.48
Avg SD		2.02	Avg SD Months	1.39
SD btwn Labs		1.38	SD btwn Labs	1.16
Labs Incl		42	Labs Incl	41

**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 #621 (F)  
June 2021

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11

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	
2377JN	52.6 *H	49.9 *	56.9	54.6	53.5	-2.02 *	4.8	2.9 H	53.0	-2.14 *	5.0	2.2	16	MB
3HFB9T	59.7 L	59.7 L	59.9 L	59.8 L	59.8	0.75	1.1	0.1 L	59.5	0.62	1.6	0.3 L	16	LD
3K24AM	58.0	59.0	58.3	57.9	58.3	0.10	4.0	0.5	58.0	-0.01	3.6	0.6	16	LC
64Q2NK	58.1	58.8	58.7	57.7	58.3	0.11	3.2	0.5	58.0	-0.01	3.5	0.6	16	LD
6XWG9H	58.0	58.7	58.4 L	57.0 L	58.0	-0.02	1.7	0.7	58.3	0.11	2.0	0.9	16	LC
788NYJ	60.8	61.2 L	62.4	62.8	61.8	1.66	3.4	1.0	58.8	0.33	3.8	2.1	16	LD
7L6Z8M	64.8 X	60.5 H	61.7	63.3	62.6	1.99 *	5.7	1.9	63.9	2.52 *	4.5	2.4	16	LC
7NPYAJ	55.4	55.5	58.5	55.8	56.3	-0.80	4.1	1.5	56.7	-0.55	3.4	1.6	16	LZ
7W3TPL	59.5	59.5	60.2	59.3	59.6	0.70	4.3	0.4	58.8	0.33	4.6	1.1	16	TJ
8KMK3K	53.0 *	51.0 *	53.0	51.4 *	52.1	-2.65 *	3.5	1.1	53.8	-1.81	3.5	2.2	16	TH
8NRYZC	56.5	56.4	58.7	59.8	57.9	-0.09	3.6	1.6	58.9	0.37	3.8	1.6	16	LD
8TFVCF	55.4	59.0	57.4	57.3	57.3	-0.35	4.0	1.5	59.6	0.70	3.5	2.1	16	LD
8YN33K	59.6	57.1 H	56.8	58.7 L	58.1	-0.01	3.9	1.3	57.7	-0.14	4.0	2.3	16	EM
9428DK	46.7 X	49.7 *	51.6 *L	54.5	50.6	-3.30 X	3.0	3.3 H	53.1	-2.11 *	3.6	2.9	16	LD
ABQ2ZG	54.6	54.1	56.1	56.6	55.3	-1.21	3.4	1.2	56.1	-0.82	3.2	1.1	16	TH
AE6Y7J	58.6	59.8	62.0	61.2	60.4	1.04	4.2	1.5	59.5	0.64	4.1	1.6	16	LD
CANDAG	58.0 L	57.3	56.8	57.5	57.4	-0.30	2.5	0.5	57.9	-0.06	2.5	0.9	16	EN
DEJDE6	59.7	60.4	58.7	60.9	59.9	0.82	3.3	0.9	59.8	0.75	3.4	1.1	12	LD
DYARQ9	58.7	58.3	59.0	57.3	58.3	0.12	3.0	0.7	58.9	0.38	3.2	1.3	16	LZ
ECBH97	59.0	57.6	59.9	60.2	59.2	0.49	2.7	1.2	59.7	0.74	3.0	1.4	16	LC
FBWDA9	55.4	57.9	57.5	59.5	57.6	-0.22	3.4	1.7	59.1	0.47	3.6	1.8	16	LD
FPTUY8	57.1	58.1	57.9	57.3	57.6	-0.20	3.2	0.5	59.7	0.71	31.6	9.3 H	16	LD
G9ZJPA	58.3	54.6	57.3	57.8	57.0	-0.47	3.5	1.7	58.3	0.11	3.7	2.6	16	LD
H3BDH2	57.0	55.9	55.6	56.2	56.2	-0.84	2.9	0.6	57.7	-0.14	4.0	2.3	8	LD
HMWVXD	63.0 *	63.7	61.1	61.9	62.4	1.93	2.8	1.1	62.4	1.87	2.8	1.0	16	LD
JTFRP8	55.7	54.7	57.3	55.2	55.7	-1.06	3.2	1.1	55.6	-1.04	3.6	1.5	8	LD
JTXUL9	57.5	59.4	55.6	54.9	56.9	-0.54	3.6	2.0	56.9	-0.46	3.5	1.5	16	LC
K4TCNU	58.7	58.4	58.7	58.6	58.6	0.24	3.4	0.1 L	59.1	0.45	3.3	0.5 L	12	LD
K7HKVB	26.5 X	27.1 X	28.3 X	27.1 X	27.3	-13.69 X	3.9	0.8	27.3	-13.09 X	3.9	0.8	4	XX
KNZGC4	58.2	58.6	58.6	58.0	58.4	0.13	2.2	0.3	58.3	0.13	1.9	0.4 L	16	LD
L2PRN2	57.9	57.5	56.3	57.7	57.3	-0.33	3.3	0.7	56.8	-0.53	3.2	1.1	16	LD
M63Z3Q	60.1 H	56.6	56.8	54.5	57.0	-0.48	4.2	2.3	57.3	-0.31	3.7	1.4	16	LZ
M6H8DZ	60.2	59.0	62.0	63.1	61.1	1.34	3.9	1.8	60.8	1.19	3.6	2.3	16	LD
M7DQF2	51.3 X	50.2 *	51.5 *	51.4 *	51.1	-3.11 X	2.7	0.6	53.3	-1.99 *	2.5	1.8	16	LD
MP8JCT	56.9	55.6	56.1	55.5	56.0	-0.91	3.9	0.6	57.6	-0.16	4.2	1.7	12	LD



Containerboard Interlaboratory Testing Program  
Analysis 240

Report #621 (F)  
June 2021

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11

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	
MVDAFY	60.5 L	59.8 L	58.6	60.3 L	59.8	0.77	1.4	0.8	60.1	0.88	1.2	0.9	16	XX
NGDJL8	57.8	57.2	56.3	58.7	57.5	-0.25	3.0	1.0	57.9	-0.05	2.8	1.5	16	LD
NJJ4A8	45.1 X	43.5 X	46.7 XH	46.2 X	45.4	-5.63 X	5.3	1.4	45.5	-5.33 X	4.9	1.2	12	TC
NKQL94	57.4	58.4	54.0	57.8	56.9	-0.52	2.2	2.0	57.4	-0.24	3.2	1.7	16	LD
PCGE9T	58.6	59.2	59.9	58.4	59.0	0.43	3.0	0.6	57.8	-0.09	3.2	2.1	16	LZ
PEE7QQ	56.4	53.0	56.1	56.5	55.5	-1.14	3.3	1.7	55.9	-0.90	3.3	1.2	16	LD
PF9WW6	57.7	57.3	54.4	57.5	56.7	-0.60	2.7	1.6	55.3	-1.15	3.0	2.0	16	LD
PGLBRT	53.6 *	52.8	53.5	54.2	53.5	-2.02 *	3.2	0.6	53.3	-1.98 *	2.9	1.4	16	LC
QU9TVX	56.5	60.9	57.8	57.4	58.1	0.03	2.6	1.9	57.5	-0.23	3.8	2.0	16	LC
TCYWEV	57.2	61.4	56.5	61.4	59.1	0.47	4.5	2.6	60.0	0.87	4.7	2.4	16	LD
TFHZYL	59.5	58.8	57.7 L	58.8	58.7	0.29	2.4	0.7	57.1	-0.40	2.7	2.1	16	TU
TVUEEY	57.5	58.4	58.0	59.6 H	58.4	0.13	5.4	0.9	57.8	-0.10	5.3	1.0	16	TG
U84BXT	60.0 L	61.0	60.4	60.4 L	60.5	1.06	1.7	0.4	60.3	1.00	1.6	0.6	16	MB
VVPPDY	No DATA	No DATA	No DATA	54.9	54.9	-1.39	4.0	0.0	55.4	-1.13	4.3	1.4	5	LD
W33XFL	56.0	63.7	62.5	64.2 *H	61.6	1.57	4.1	3.8 H	61.5	1.48	4.5	2.7	16	LD
XNG66J	59.8	59.3	62.0	61.8	60.7	1.17	3.8	1.4	60.6	1.11	4.4	1.8	16	TU
YVGLFP	57.9	57.8	58.0	58.0	57.9	-0.07	1.7	0.1 L	57.9	-0.06	1.6	0.1 L	16	LD
ZHK94X	59.4 H	62.5	61.7	60.4	61.0	1.30	4.2	1.4	62.1	1.73	4.2	2.8	16	TH
ZQBUAW	56.3	55.4	60.1 H	58.0	57.5	-0.27	8.1	2.1	56.2	-0.79	5.8	2.9	16	LD
ZQHP7P	59.8	62.0	60.2	61.4	60.8	1.22	3.3	1.0	60.0	0.86	3.7	1.5	16	EN
ZZ7JHL	56.4	57.0	54.9	54.2	55.6	-1.10	3.7	1.3	55.7	-0.97	4.0	1.2	16	LZ

Consensus (All Labs) Results											
Wk Mean	57.79	57.73	57.92	58.12	Month Mean	58.07		Grand Mean	58.00		
Avg SDr	3.54	3.57	3.91	3.24	Avg SD	3.60		Avg SD	5.58		
SD btwn Labs	2.05	3.22	2.64	2.83	SD btwn Labs	2.25		SD btwn Labs	2.35		
Labs Incd	50	53	53	54	SD btwn Wks	1.42		SD btwn Wks	2.12		
Labs Exclcd	5	2	2	2	Labs Incd	52		Labs Incd	54		
Labs not Rcvd	1	1	1	0							



Containerboard Interlaboratory Testing Program  
Analysis 240  
**Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11**  
TAPPI Official Test Method T809

**Report #621 (F)**  
**June 2021**

**Key to Instrument Codes Reported by Participants**

<b>EM</b>	Emerson 1200 Series	<b>EN</b>	Emerson 2200 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>TG</b>	TMI Compression Tester, Model 17-10
<b>TH</b>	TMI Compression Tester, Model 17-76	<b>TJ</b>	TLS Compression Tester, Model CDM-5
<b>TU</b>	TMI Universal Crush Tester (TMI K440)	<b>XX</b>	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program  
Analysis 250

Report #621 (F)  
June 2021

Fluted Edge Crush Strength (FCF), 26 lb Corrugating Medium - CM11

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
3K24AM	69.2	67.9	68.5	68.3	68.5	-0.53	3.4	0.5	68.2	-0.68	4.0	0.7	16	LD
8KMK3K	64.7 *	59.0 X	58.0 X	60.8 XH	60.6	-4.91 X	4.1	3.0 H	59.1	-9.07 X	3.7	2.5	16	TH
8TFVCF	68.9 H	68.6	68.6	68.6	68.7	-0.40	4.5	0.2 L	69.2	0.18	3.8	1.5	16	LD
DEJDE6	70.9	70.1	70.5	71.1	70.6	0.68	2.4	0.4	71.1	2.00 *	3.0	1.9	12	LD
DYARQ9	69.2	69.6	68.5	69.5	69.2	-0.12	3.5	0.5	69.1	0.16	3.0	1.3	16	LZ
EAJN9G	52.7 X	52.8 X	53.6 X	53.8 XH	53.2	-9.06 X	3.7	0.5	53.0	-14.70 X	3.4	2.0	12	LD
F69VUC	68.7	68.7	67.9	68.8	68.5	-0.49	2.2	0.4	68.2	-0.73	3.2	1.1	16	LZ
FBWDA9	77.3 X	69.5	70.8	70.6	72.1	1.49	3.2	3.6 H	70.8	1.72	3.3	2.2	16	LD
H3BDH2	69.1	65.9	70.8	69.0	68.7	-0.40	3.9	2.1	68.7	-0.25	4.0	1.9	8	LD
JTXUL9	71.8	70.4	69.7	71.0	70.7	0.73	4.0	0.9	68.8	-0.15	4.1	4.2	16	LC
KNZGC4	69.0	69.3	69.7	69.3 L	69.3	-0.05	1.9	0.3	69.0	0.06	1.8	0.3 L	16	LD
L2PRN2	73.0 *	72.4 *	74.6 *	73.9 X	73.5	2.27 *	3.1	1.0	73.0	3.74 X	3.1	1.2	16	LD
M6H8DZ	71.1	68.2	68.9	70.6	69.7	0.16	3.1	1.4	68.5	-0.42	4.2	2.4	16	LD
M7DQF2	68.8	68.5	68.3	68.2	68.5	-0.54	3.1	0.3	68.8	-0.19	3.5	1.0	16	LD
MVDAFY	70.9	70.4	69.2 L	70.1 L	70.1	0.39	1.3	0.7	70.6	1.54	1.1	1.2	16	XX
NGDJL8	69.0	69.2 H	69.7	67.5	68.8	-0.33	3.5	1.0	68.5	-0.40	3.3	1.2	16	LD
PCGE9T	67.7	65.6	66.0	64.3 XH	65.9	-1.97 *	4.5	1.4	67.5	-1.34	3.6	1.4	16	LZ
QU9TVX	71.1	70.1	72.6	72.0	71.5	1.14	3.1	1.1	70.6	1.52	3.3	1.5	16	LC
U84BXT	71.3	70.9	71.9	71.2	71.3	1.08	1.6	0.4	68.8	-0.11	1.6	1.7	16	MB
UYUX7P	70.1	67.5	68.4	70.3	69.1	-0.20	2.2	1.3	68.0	-0.87	2.4	1.3	16	LD
VVPPDY	No DATA	No DATA	No DATA	59.4 XH	59.4	-5.62 X	7.2	0.0	69.4	0.44	5.1	5.8 H	5	LD
YVGLFP	69.1	69.4	69.2	69.2 L	69.2	-0.12	1.6	0.1 L	69.0	0.02	1.7	0.2 L	16	LD
ZQBUAW	67.4	64.8 *	67.6	67.7	66.9	-1.42	3.1	1.4	66.8	-1.95 *	3.4	1.8	16	LD
ZQHP7P	67.3	67.6	65.2 *	68.0	67.0	-1.35	3.6	1.3	68.4	-0.54	3.6	3.1	16	EN

Consensus (All Labs) Results														
Wk Mean	69.44	68.79	69.36	69.52	Month Mean	69.42			Grand Mean	68.96				
Avg SDr	3.33	3.08	3.12	2.72	Avg SD	3.12			Avg SD	3.33				
SD btwn Labs	1.84	1.83	2.11	1.33	SD btwn Labs	1.79			SD btwn Labs	1.09				
Labs Incl	21	21	21	19	SD btwn Wks	1.23			SD btwn Wks	2.20				
Labs Excl	2	2	2	5	Labs Incl	21			Labs Incl	21				
Labs not Rcvd	1	1	1	0										



Containerboard Interlaboratory Testing Program  
Analysis 250

Report #621 (F)  
June 2021

**Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium - CM11**  
TAPPI Official Test Method T843

**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 - CM11**  
 TAPPI Official Test Method T822

**Report #621 (F)**  
**June 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	
2377JN	44.9	44.8	39.2	45.1	43.5	-0.06	3.4	2.9	44.8	0.30	3.6	2.0	16	MB
3HFB9T	44.9 L	44.7 L	45.7 L	45.8 L	45.3	0.51	1.0	0.6	44.8	0.32	0.9	0.4 L	16	LD
6PNKNK	43.2	43.6	46.4	42.0	43.8	0.03	2.4	1.8	42.6	-0.80	2.6	2.1	16	LD
6XWG9H	47.3 L	49.2 *L	48.4	47.7	48.1	1.46	1.5	0.8	47.8	1.80	1.4	0.5 L	16	LC
7L6Z8M	44.7	46.9	45.0	43.5	45.0	0.44	3.2	1.4	39.3	-2.47 *	3.6	4.1	16	XX
7NPYAJ	41.8 *	42.1	42.7	43.1	42.4	-0.43	3.8	0.6	42.8	-0.68	3.2	1.4	16	LD
8NRYZC	45.9	46.9	47.6	46.3	46.7	0.98	3.3	0.7	46.1	0.98	3.4	1.3	16	LD
8TFVCF	46.1	46.1	46.7	44.4	45.8	0.70	3.5	1.0	46.4	1.10	3.8	1.1	16	LD
8YN33K	45.5	46.1	47.4	45.5	46.1	0.79	2.7	0.9	46.8	1.32	3.8	1.3	16	EM
ABB69H	46.5	44.9 H	43.1	46.7 H	45.3	0.52	5.0	1.6	45.3	0.57	4.7	1.5	16	XX
ABQ2ZG	35.6 X	34.9 X	36.5 *	36.1 *	35.8	-2.61 *	2.6	0.7	36.5	-3.84 X	2.3	1.2	16	TH
FBWDA9	45.1	45.0	44.6	45.6	45.0	0.44	3.0	0.4	45.3	0.57	2.9	1.6	16	LD
FPTUY8	44.0	44.3	44.6	44.2	44.3	0.18	2.8	0.2 L	45.2	0.50	2.5	1.8	16	LC
JTFRP8	45.2	43.9	39.7	42.8	42.9	-0.27	3.1	2.3	43.3	-0.45	3.2	1.8	8	LD
K4TCNU	44.2	44.2	44.0	44.4	44.2	0.16	2.1	0.1 L	44.1	-0.03	2.5	0.2 L	12	LD
KNZGC4	43.9	44.1	43.5	44.1	43.9	0.06	2.9	0.3 L	44.7	0.26	3.0	0.6	16	LD
L2PRN2	45.7	44.2	45.0	43.3	44.5	0.28	3.4	1.0	45.1	0.47	3.5	1.2	16	XX
M7DQF2	46.3	44.3	45.0	42.9 L	44.6	0.29	2.9	1.4	43.2	-0.49	2.8	1.5	16	LD
MP8JCT	44.7	46.6	43.4	47.4	45.5	0.61	3.4	1.8	44.1	-0.04	3.3	2.2	12	EM
NGDJL8	42.9	44.7	44.8	41.4	43.5	-0.08	3.4	1.6	43.2	-0.52	3.5	1.5	16	LD
NJ4A8	38.1 X	36.7 XH	36.3 *H	36.9 *H	37.0	-2.22 *	5.3	0.8	37.3	-3.44 X	5.6	1.1	12	TC
PEE7QQ	46.6	44.6 H	47.4	46.9	46.4	0.88	4.2	1.2	45.2	0.49	3.4	1.6	16	LD
QU9TVX	49.4 *	46.3	45.8	46.9	47.1	1.12	3.9	1.6	46.1	0.94	3.3	1.6	16	LC
TCYWEV	45.5	46.3	39.9	33.2 XH	41.2	-0.81	4.6	6.1 H	41.5	-1.34	5.0	5.7 H	16	LD
TFHZYL	34.3 X	38.9 *	39.5	38.9	37.9	-1.91	3.1	2.4	40.0	-2.11 *	2.7	2.0	16	TU
TQZHRT	39.3 X	40.0 *	43.1	43.3	41.4	-0.75	2.8	2.1	43.0	-0.62	2.8	1.8	16	TH
U84BXT	42.8 L	43.7 L	43.3	42.8	43.1	-0.19	1.4	0.5	43.3	-0.44	1.5	1.1	16	MB
W33XFL	48.4	47.2	48.0	46.1	47.4	1.23	3.7	1.0	46.3	1.07	4.1	1.3	16	LZ
ZHK94X	43.9	40.4	37.9	36.3 *	39.6	-1.35	3.3	3.3	42.8	-0.68	3.6	3.7	16	LZ

Consensus (All Labs) Results														
Wk Mean	45.17	44.59	43.59	43.58	Month Mean	43.71			Grand Mean	44.19				
Avg SDr	3.40	3.47	3.11	2.98	Avg SD	3.30			Avg SD	3.26				
SD btwn Labs	1.74	2.26	3.41	3.21	SD btwn Labs	3.03			SD btwn Labs	1.99				
Labs Incl	25	27	29	28	SD btwn Wks	1.85			SD btwn Wks	2.06				
Labs Excl	4	2	0	1	Labs Incl	29			Labs Incl	27				
Labs not Rcvd	0	0	0	0										





Containerboard Interlaboratory Testing Program  
Analysis 255  
**Ring Crush (RCT), 26 lb Corrugating Medium - CM11**  
TAPPI Official Test Method T822

**Report #621 (F)**  
**June 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 #621 (F)  
June 2021

STFI, 26 lb Corrugating Medium - CM11

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	
2377JN	14.1	13.7	14.5 H	12.8 H	13.8	-0.09	2.6	0.7	14.3	0.96	1.5	0.7	16	LA
3K24AM	13.6	13.0	13.8	14.0	13.6	-0.53	0.8	0.5	13.6	-0.45	0.9	0.4	16	LB
64Q2NK	14.0	14.0	14.2	13.2 L	13.9	0.04	0.9	0.5	13.8	-0.08	0.9	0.4	16	LB
7NPYAJ	13.6	12.9	14.1	13.9	13.6	-0.43	1.0	0.5	13.6	-0.61	1.1	0.3	16	LZ
7W3TPL	13.3	13.5	13.0	13.7	13.4	-0.94	1.0	0.3	13.7	-0.23	1.0	0.4	16	TT
8KMK3K	13.8	13.5	13.0	13.6	13.5	-0.73	1.1	0.3	13.1	-1.60	1.2	0.5	16	LZ
8TFVCF	13.1	13.6	13.2	13.7	13.4	-0.90	0.9	0.3	13.4	-0.95	1.0	0.3	16	LB
AE6Y7J	14.1 L	14.7 L	14.6 L	14.4 L	14.4	1.24	0.5	0.3	14.4	1.18	1.0	0.4	16	LH
CANDAG	14.2	13.6	13.3	13.1 L	13.6	-0.59	0.9	0.5	13.5	-0.76	0.9	0.5	16	LH
FPTUY8	13.8	14.8	14.5	14.9	14.5	1.38	1.0	0.5	14.5	1.44	1.1	0.3	16	LH
JTFRP8	9.7 XH	9.2 X	8.5 X	11.1 X	9.6	-8.81 X	1.2	1.1	9.2	-10.22 X	1.1	1.2 H	8	LZ
KNZGC4	14.0	13.9	13.9	14.0	13.9	0.20	1.1	0.1 L	13.9	0.05	1.2	0.1 L	16	LB
L3CEUA	15.1 *	14.7	14.4	15.1	14.8	2.07 *	1.0	0.3	14.5	1.50	1.0	0.4	16	LU
M7DQF2	14.8 H	14.4	14.7	14.0	14.5	1.33	1.1	0.4	14.4	1.27	1.1	0.3	16	LA
MVDAFY	13.5	13.4	14.1	13.3	13.6	-0.55	1.1	0.4	13.8	-0.07	1.1	0.6	16	XX
NJJ4A8	13.5	12.8	13.5	13.9	13.4	-0.87	1.2	0.4	13.3	-1.30	1.1	0.5	12	TS
NKQL94	13.4	13.2	13.1	13.2	13.2	-1.30	1.1	0.1	13.4	-0.91	1.1	0.3	16	LU
PB246U	13.4	14.0	14.3	13.8	13.9	0.09	1.2	0.4	13.6	-0.55	1.1	0.5	14	LA
QU9TVX	13.7	14.3	14.0	13.5	13.9	0.11	1.1	0.3	13.9	0.03	1.0	0.4	16	LU
TCYWEV	13.7	15.2 *	10.7 X	15.7 *L	13.8	-0.04	1.1	2.3 H	14.4	1.26	1.2	1.3 H	16	LA
XNG66J	14.0	14.3	13.5	13.4	13.8	-0.05	1.1	0.4	13.9	0.10	1.2	0.3	11	LA
YVGLFP	13.9 L	13.9 L	13.9 L	13.8 L	13.9	0.09	0.4	0.1 L	13.9	0.01	0.4	0.1 L	16	LA
ZQBUAW	15.1 *	14.2	14.6	15.1	14.8	1.95 *	1.1	0.4	14.6	1.55	1.1	0.5	16	LA
ZQHP7P	13.3 H	12.5 *	13.1	12.9	12.9	-1.90 *	1.2	0.3	13.0	-1.81	1.1	0.3	16	LB
ZUF98M	13.7	14.3	13.9	14.2	14.0	0.42	1.0	0.3	13.8	-0.03	1.0	0.3	16	LA

Consensus (All Labs) Results									
Wk Mean	13.86	13.85	13.88	13.87	Month Mean	13.83	Grand Mean	13.85	
Avg SDr	0.99	1.01	1.03	1.38	Avg SD	1.12	Avg SD	1.08	
SD btwn Labs	0.53	0.69	0.56	0.72	SD btwn Labs	0.48	SD btwn Labs	0.46	
Labs Incl	24	24	23	24	SD btwn Wks	0.60	SD btwn Wks	0.48	
Labs Excl	1	1	2	1	Labs Incl	24	Labs Incl	24	
Labs not Rcvd	0	0	0	0					



Containerboard Interlaboratory Testing Program  
Analysis 261  
**STFI, 26 lb Corrugating Medium - CM11**  
TAPPI Official Test Method T826

**Report #621 (F)**  
**June 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