



## Containerboard Interlaboratory Testing Program

Participant Summary Report #562 (H) - July 2016

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**Revision Notice:**

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

[Introduction to the Containerboard Program](#)

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

Analysis	Sample	Analysis Name
<a href="#">201</a>	<a href="#">BX10</a>	<a href="#">Box Compression Strength, Corrugated Boxes</a>
<a href="#">202</a>	<a href="#">ECT9</a>	<a href="#">Edgewise Compressive Strength, Wax (T811), Corrugated board</a>
<a href="#">203</a>	<a href="#">ECT9</a>	<a href="#">Edgewise Compressive Strength by Clamp (T839), Corrugated board</a>
<a href="#">205</a>	<a href="#">42D1</a>	<a href="#">Mullen Burst of Linerboard, 42 lb Linerboard</a>
<a href="#">206</a>	<a href="#">56A1</a>	<a href="#">Mullen Burst of Linerboard, 56 lb Linerboard</a>
<a href="#">215</a>	<a href="#">42D1</a>	<a href="#">Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard</a>
<a href="#">216</a>	<a href="#">56A1</a>	<a href="#">Ring Crush of Linerboard, Rigid Platen Type, 56 lb Linerboard</a>
<a href="#">223</a>	<a href="#">42D1</a>	<a href="#">STFI of Linerboard, 42 lb Linerboard</a>
<a href="#">224</a>	<a href="#">56A1</a>	<a href="#">STFI of Linerboard, 56 lb Linerboard</a>
<a href="#">228</a>	<a href="#">56A</a>	<a href="#">Roughness - Stylus Method, 56 lb Linerboard</a>
<a href="#">229</a>	<a href="#">42D2</a>	<a href="#">Roughness - Sheffield Method, 42 lb Linerboard</a>
<a href="#">231</a>	<a href="#">36Z</a>	<a href="#">Internal Bond Strength, Linerboard, 36 lb Linerboard</a>
<a href="#">234</a>	<a href="#">36Z</a>	<a href="#">Coefficient of Static Friction - Inclined Plane, 36 lb Linerboard</a>
<a href="#">237</a>	<a href="#">36Z</a>	<a href="#">Air Resistance - Gurley Method, Linerboard, 36 lb Linerboard</a>
<a href="#">240</a>	<a href="#">CM81</a>	<a href="#">Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium</a>
<a href="#">250</a>	<a href="#">CM81</a>	<a href="#">Fluted Crush of Medium, 26 lb Corrugating Medium</a>
<a href="#">255</a>	<a href="#">CM81</a>	<a href="#">Ring Crush of Medium, 26 lb Corrugating Medium</a>
<a href="#">261</a>	<a href="#">CM81</a>	<a href="#">STFI of Medium, 26 lb Corrugating Medium</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; 36 lb. and 56 lb. - alternate months. The participants return their test results for analysis and receive a monthly report.

Please refer to the section, "EXPLANATION OF TABLES", for definitions of terms and guidelines to interpreting the results.

### USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

The samples of linerboard and corrugating medium, which have been randomized and placed in sealed packages for distribution in this program, may be used as collaborative reference materials. The values most representative of each material are the Cumulative Grand Means in the latest reports, given at the bottom right of each table. Comparisons can only be made within one lot of material; therefore check your measurements against the Cumulative Grand Means with the same lot code as on the packages being tested.

<b>Material</b>	<b>Lot Code</b>	<b>Dates in Use</b>
26 lb Corrugating Medium	CM81	October 2015-Current
	CM73	December 2013-September 2015
36 lb Linerboard	36Z3	December 2014-Current
	36Z2	February 2012-October 2014
42 lb Linerboard	42D1	April 2015-Current
	42B4	May 2014-March 2015
56 lb Linerboard	56A1	July 2016-Current

### ABOUT CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 80 countries, currently participate in the CTS programs.

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## EXPLANATION OF TABLES

Each analysis is divided into three time spans. On the left side of the table are the individual laboratory results for each week of the month; in the center are each lab's statistical data for the month; and on the right are each lab's cumulative data for up to 16 weeks. At the bottom of the table are the consensus statistics for all the participants for each of the three time spans.

### Definitions of Terms Used

#### Weekly Results

##### Laboratory Data

- WebCode - A six character laboratory identifier used to maintain information on a confidential basis. The WebCode is unique for each cycle and will change for each report. Your WebCode can be found in your Individual Report (Current Month Performance Report) and your datasheet.
- Weekly Means - The average of the test results obtained by the participant for each week that data were reported.

##### Consensus Data

- Wk Mean - For each week, the average of the Means for all the participants, excluding those laboratories flagged with an 'X'.
- Avg SDr - For each week, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'. The Avg SDr is an indication of the variation of measurements within an average laboratory.
- SD btwn Labs - For each week, the standard deviation of the laboratory Means about the Wk Mean, excluding those laboratories flagged with an 'X'. The SD LABS is an indication of the precision of measurement between the laboratories.
- Labs Incl - The number of laboratory Means included in the Wk Mean for that week.
- Labs Excl - The number of laboratory Means reported but excluded from the Wk Mean for that week because of outlying results ('X' following Mean).
- Labs not rcvd - The number of laboratories failing to report for that week.

#### Monthly Results

##### Laboratory Data

- Mean - For each laboratory, the average of all the weekly Means reported for this month.
- CPV - **Comparative Performance Value**, an indication of how well a laboratory's Mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean). The closer a laboratory's CPV is to zero, the more consistent its results are with the other participants' data.
- SDr - For each laboratory, the average of the weekly within-lab standard deviations (SDr's) for all reported Weekly Means this month.
- SD Wk - The standard deviation among the laboratory's weekly Means, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.

##### Consensus Data

- Month Mean - The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for this month.
- Avg SDr - For the current month, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'.
- SD btwn Labs - For the current month, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
- SD btwn Group - For the current month, the standard deviation of the laboratory Means within the group about the Month Mean, excluding those laboratories flagged with an 'X'.
- SD btwn Wks - For the current month, the average of the laboratory between week standard deviations (SD Wks') for all the participants.

## Cumulative Results

### Laboratory Data

Mean	- For each lab, the average of all the monthly Means reported for the weeks shown.
CPV	- <b>Comparative Performance Value</b> , an indication of how well a laboratory's cumulative mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean).
SDr	- For each laboratory, the average of the weekly within-lab standard deviations (SDr's) for the weeks shown.
SD Wk	- The standard deviation among the laboratory's weekly Means for the weeks shown, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.
Wks	- The number of weeks included in the cumulative period.
Inst	- The two letter instrument code. Codes are summarized at the bottom of the last analysis page.

### Consensus Data

Grand Mean	- The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for the number of weeks included in the cumulative period.
Avg SDr	- For the cumulative period, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'.
SD btwn Labs	- For the cumulative period, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
SD btwn Wks	- For the cumulative period, the average of the laboratory between week standard deviations for all the participants.

**Any laboratory that receives a 'flag' following a mean or standard deviation should refer to the chart below for an explanation of the data flag symbol:**

<u>Flag</u>	<u>Explanation</u>
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Data Flags "X" and "\*" indicate a laboratory's performance on an average value differed from the consensus.

Data Flags "H" and "L" indicate a laboratory's performance on a standard deviation differed from the consensus.

Flags assigned to Weekly Means, Monthly Mean and Cumulative Mean:

- X** Excluded from the weekly means, monthly means and/or the cumulative mean. Immediate review of data and/or testing procedure is recommended.
- \*** Included in the weekly means, monthly means and/or the cumulative mean; however, lab should review testing procedure and monitor future results.

Flags assigned to Weekly Means:

- H** Indicates high within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory average SDr and consensus average SDr values are shown.
- L** Indicates low within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory monthly average SDr and consensus average SDr values are shown.

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

- H** Indicates high variability between weekly means (high week-to-week variation).
- L** Indicates low variability between weekly means (low week-to-week variation).



Containerboard Interlaboratory Testing Program  
Analysis 201

Report #562 (H)  
July 2016

Top to Bottom Box Compression Strength, Corrugated Boxes - BX10

TAPPI Official Test Method T804

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
4RMDGT	825.4	1.74	45.3	785.4	1.78	163.3	4	TB
6WXQYR	790.3	1.26	56.7	778.4	1.65	47.4	4	TE
6ZW2UR	757.1	0.82	35.9	749.0	1.06	42.2	3	LS
7Q63GR	638.6	-0.77	30.3	643.1	-1.04	45.5	4	LS
87DGBU	747.0	0.68	35.5	759.0	1.26	33.3	4	LH
9PMV7U	579.6	-1.56	25.9	634.3	-1.22	50.4	4	LL
9PPHPT	635.1	-0.81	76.1	661.1	-0.68	54.0	4	ER
BLZV8P	677.6	-0.24	43.9	673.6	-0.44	49.4	4	LM
DNYTQG	652.6	-0.58	47.2	646.3	-0.98	36.6	4	LS
ENUT4L	700.2	0.06	74.8	702.2	0.13	59.4	4	LM
FRPY3N	675.2	-0.28	52.9	689.3	-0.13	39.2	4	LG
G42PFK	729.2	0.45	50.4	676.8	-0.37	45.6	4	ES
GR962E	655.6	-0.54	33.8	643.0	-1.04	29.7	2	LG
H2PALJ	699.8	0.05	21.4	662.5	-0.66	54.0	4	ER
JL6F7B	592.1	-1.39	27.2	664.0	-0.63	35.7	4	LH
K2WBGG	728.8	0.44	25.3	763.4	1.35	16.2	4	ER
K78NYF	687.5	-0.11	23.3	681.3	-0.28	35.2	4	ER
LMYLZB	691.9	-0.05	46.7	679.3	-0.32	37.6	4	EX
LQDF8	771.4	1.01	16.0	757.3	1.23	20.2	2	XX
T34HY2	642.5	-0.71	9.5	681.4	-0.28	35.4	4	ET
UYYCWZ	810.9	1.54	48.2	776.2	1.60	39.4	4	LG
V6KLK4	806.6	1.48	32.9	687.7	-0.16	114.0	4	EX
W6Z8U7	661.8	-0.46	27.5	668.3	-0.54	27.0	4	EX
YLWALU	544.0	-2.03 *	58.4	630.8	-1.29	33.2	4	LL

Consensus (All Labs) Results

Month Mean	695.87	Grand Mean	695.56
Avg SDr	42.78	Avg SDr	56.39
SD btwn Labs	74.65	SD btwn Labs	50.35
Labs Incl	24	Labs Incl	24

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	697.46	78.16	1.59	5
Clip sealing	674.46	62.41	21.41	16
Tape sealing	807.43	17.57	111.56	3



Containerboard Interlaboratory Testing Program  
Analysis 201

Report #562 (H)  
July 2016

**Top to Bottom Box Compression Strength, Corrugated Boxes - BX10**

TAPPI Official Test Method T804

**Key to Instrument Codes Reported by Participants**

ER	Emerson 6200 Series	ES	Emerson 8510
ET	Emerson 7200	EX	Emerson Apparatus (Model not specified)
LG	TLS / L.A.B. Validator Series	LH	L.A.B. Compression Tester Model #10610
LL	Lansmont 76-5K	LM	Lansmont 122-15k
LS	Lansmont Squeezer	TB	TMI Monitor/Compression Tester, Model 17-70
TE	Testometric M500 - 25 KN	XX	Instrument make/model not specified by lab



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

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
6ZW2UR	38.7	-0.42	1.4	39.5	-0.21	1.8	3	EM
7Q63GR	43.7	0.73	0.7	43.4	0.67	1.2	4	LC
87DGBU	40.5	0.00	1.0	39.0	-0.33	1.2	3	TC
DNYTQG	40.0	-0.13	1.8	38.9	-0.35	2.4	4	EM
FRPY3N	44.9	1.01	1.8	45.0	1.03	1.9	4	LZ
GJCBYA	32.9	-1.77	0.6	33.5	-1.57	1.1	4	XX
PTUJ2A	37.6	-0.69	0.6	37.3	-0.72	1.2	4	WK
TY64CC	46.0	1.27	1.4	47.0	1.49	1.3	2	TB

Consensus (All Labs) Results				
Month Mean		40.53	Grand Mean	40.46
Avg SDr		1.27	Avg SDr	1.56
SD btwn Labs		4.31	SD btwn Labs	4.41
Labs Incd		8	Labs Incd	8

**Key to Instrument Codes Reported by Participants**

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



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

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
4RMDGT	47.7	0.62	0.9	45.3	-0.13	0.9	4	LD
6ZW2UR	42.1	-1.40	1.8	44.2	-0.73	1.8	3	EM
72NK9X	48.9	1.02	5.9	50.1	2.32 *	3.4	4	LC
7Q63GR	48.0	0.70	1.3	46.7	0.57	1.4	4	LC
87DGBU	41.8	-1.51	0.7	42.5	-1.55	0.8	3	TC
98R7CL	46.8	0.29	0.9	46.9	0.69	1.3	4	EM
9PMV7U	43.5	-0.91	1.5	44.8	-0.37	1.5	4	LC
9PPHPT	42.7	-1.18	2.0	43.2	-1.23	2.6	4	EX
ACDFYP	45.4	-0.21	1.0	45.3	-0.15	1.3	4	LD
BLZV8P	46.1	0.05	1.2	44.7	-0.47	2.4	4	EM
C323VQ	45.3	-0.23	0.9	44.9	-0.33	1.7	4	TK
CDHMEM	42.9	-1.13	1.8	42.3	-1.65	2.1	4	TD
CV64MP	47.0	0.36	1.8	46.1	0.25	1.7	4	LD
DNYTQG	46.8	0.30	1.5	46.8	0.64	1.6	4	EM
DYWU4L	44.1	-0.69	1.6	43.7	-0.98	1.5	4	TG
EE8UDG	49.3	1.17	0.9	48.6	1.54	1.0	4	LC
ENUT4L	49.2	1.16	0.9	47.9	1.20	1.1	4	TG
FRPY3N	42.7	-1.19	1.7	44.0	-0.78	2.4	4	LE
G42PFK	47.7	0.61	1.3	45.8	0.13	1.8	4	LD
G6TR6K	42.7	-1.19	2.1	43.5	-1.05	2.7	4	LC
GGM4JJ	47.0	0.35	2.0	45.0	-0.28	2.4	4	LD
GJCBYA	32.9	-4.69 X	0.6	33.4	-6.22 X	0.9	4	XX
H2PALJ	48.0	0.71	1.8	46.6	0.52	2.1	4	LD
JL6F7B	42.6	-1.21	1.1	52.4	3.50 X	2.5	4	EM
K2WBGG	42.1	-1.40	1.1	42.3	-1.68	1.0	4	EM
K78NYF	82.2	12.93 X	7.9	53.9	4.23 X	4.3	4	TB
LMYLZB	48.6	0.94	0.7	48.1	1.28	0.7	4	TL
QL7JX3	46.4	0.14	2.1	46.9	0.67	1.3	4	LC
T34HY2	51.6	2.01 *	2.0	51.9	3.21 X	1.7	4	TD
TY64CC	47.8	0.66	1.6	47.9	1.17	1.2	2	TG
UMR789	48.3	0.82	2.7	46.3	0.34	2.9	4	LC
UYCWCWZ	46.1	0.02	1.7	44.9	-0.35	2.4	4	EM
V3E4L9	46.6	0.21	1.2	46.5	0.48	1.4	3	TM
V6KLLK4	51.0	1.79	1.5	47.7	1.09	1.6	3	CT
W6Z8U7	45.4	-0.22	3.1	45.9	0.14	1.9	4	LD
WPMW4X	49.5	1.25	1.9	48.0	1.21	1.7	4	LD
X4YUL4	47.8	0.65	1.7	46.7	0.55	1.6	4	LC
YLWALU	45.4	-0.23	1.4	45.0	-0.32	1.3	4	BU
Z33T2X	42.7	-1.19	2.2	43.5	-1.04	1.8	4	LD





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

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
ZJPEFW	40.6	-1.93	1.8	42.2	-1.72	1.5	4	TB

Consensus (All Labs) Results			
Month Mean	46.00	Grand Mean	45.58
Avg SDr	1.88	Avg SDr	1.82
SD btwn Labs	2.80	SD btwn Labs	1.96
Labs Incd	38	Labs Incd	36

**Key to Instrument Codes Reported by Participants**

<b>BU</b> Buchel Digital Crush Tester <b>EM</b> Emerson 1200 Series <b>LC</b> L&W Crush Tester 48 <b>LE</b> L&W Crush Tester 840 <b>TC</b> TMI Monitor/Compression Tester, Model 17-37 <b>TG</b> TMI Digital Crush Tester, 17-76 <b>TL</b> Tech-Lab Systems Compression <b>XX</b> Instrument make/model not specified by lab	<b>CT</b> Con-Ten <b>EX</b> Emerson (model not specified) <b>LD</b> L&W Crush Tester 248 <b>TB</b> TMI Monitor/Compression Tester, Model 17-70 <b>TD</b> TMI Digital Crush Tester, Model 17-09 <b>TK</b> TLS Compression Tester, Model 5184 <b>TM</b> TMI/Hinde & Dausch
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**Containerboard Interlaboratory Testing Program**  
 Analysis 205  
**Bursting Strength (Mullen), 42 lb Linerboard - 42D1**  
 TAPPI Official Test Method T807

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
2GC2BZ	111.3	112.1	112.6	111.5	111.9	0.52	8.1	0.6	110.2	0.09	8.5	5.0	16	LA
2KCC7Z	117.0	117.1	115.1	118.6	116.9	2.17 *	9.7	1.4	113.5	1.32	10.0	3.7	16	LC
4AAUNW	113.6	112.1	105.1	110.3	110.3	0.00	12.3	3.7	109.2	-0.27	11.8	4.0	16	TB
4JYEUE	112.0	115.8	112.2 H	111.0	112.8	0.81	13.9	2.1	112.2	0.85	13.1	2.4	16	TB
4QGVHX	111.5	113.7	114.2	114.7	113.5	1.06	10.9	1.4	111.6	0.61	11.6	2.9	16	LZ
72NK9X	112.5	110.7	115.5	114.7	113.3	1.00	12.1	2.2	112.1	0.79	11.4	3.4	16	LA
7Q63GR	107.8	104.3	108.3	110.2	107.7	-0.85	9.2	2.5	105.6	-1.58	9.6	3.5	16	AH
87DGBU	112.5	112.5	108.8	111.3	111.3	0.32	13.4	1.8	112.7	1.02	13.4	2.2	16	AA
9FYXJV	107.6	108.3	113.1	104.1	108.3	-0.65	8.2	3.7	106.7	-1.18	7.2	2.9	16	TB
9HAM6T	108.5	112.2	109.5	106.7	109.2	-0.34	8.7	2.3	110.8	0.31	9.0	2.8	12	LC
ACDFYP	111.7	111.0	113.5	117.0	113.3	0.99	11.3	2.7	111.9	0.72	10.6	2.7	16	AA
AME3QL	108.6	110.8	111.3	115.3	111.5	0.40	12.4	2.8	111.2	0.46	12.8	4.0	16	XX
BLZV8P	109.7	104.6	109.8	108.5	108.1	-0.69	10.6	2.4	105.0	-1.83	10.8	3.1	16	AH
CQAAPN	109.5 L	107.1 L	107.3 L	106.8 L	107.7	-0.83	2.8	1.2	108.8	-0.39	6.4	2.9	16	LA
CUAKKN	118.2 *	114.0 H	118.3	114.9	116.4	1.98	12.5	2.2	115.0	1.86	12.2	2.7	16	LA
DNYTQG	113.4	105.8	113.4	109.1	110.4	0.05	11.0	3.7	108.7	-0.44	11.2	5.8	16	LA
FCX6RJ	108.3	108.5	103.0	101.6 *	105.4	-1.59	11.3	3.6	105.6	-1.60	11.0	2.7	16	LC
FQHKVH	105.7	107.7	112.8	108.7	108.7	-0.49	10.9	3.0	108.4	-0.54	10.3	2.6	14	LC
FRPY3N	114.6	114.4	115.8	117.0	115.4	1.68	11.9	1.2	113.9	1.48	12.1	4.3	15	LZ
G42PFK	112.8	113.5	106.9	108.3	110.4	0.04	9.9	3.3	110.8	0.32	10.5	2.5	16	LA
GCRALH	107.9	106.4	103.6	107.9	106.4	-1.24	10.5	2.1	109.5	-0.14	11.0	2.9	13	LA
GGM4JJ	102.0 *	104.7	104.9 L	108.7	105.1	-1.69	6.7	2.7	104.7	-1.93	8.3	2.4	16	LA
GR962E	109.5	115.3	112.9	112.6	112.6	0.75	11.8	2.4	114.0	1.50	10.9	4.2	8	AH
GWZCJM	109.7	107.9	103.5	103.6	106.2	-1.33	9.6	3.1	107.8	-0.79	10.8	4.0	16	LA
H2PALJ	109.1	109.4	114.0	108.8	110.3	0.02	9.3	2.5	109.4	-0.21	9.7	4.2	16	AH
H6MXYK	113.1	109.7	117.8	113.6	113.6	1.07	7.6	3.3	110.2	0.11	8.3	3.5	16	LJ
HAGUMB	121.8 X	119.6 *	124.6 X	121.6 *	121.9	3.78 X	7.0	2.1	114.8	1.78	6.7	7.7 H	16	RE
HHCPPF	109.3	107.8	103.1	112.1	108.1	-0.71	9.6	3.8	108.9	-0.38	10.7	2.7	16	AH
HWWC TL	108.3	110.2	111.8	108.8	109.8	-0.16	10.9	1.6	109.8	-0.03	11.3	2.1	14	LA
JECZLD	107.5	110.8	104.4	110.6	108.3	-0.63	11.5	3.0	106.6	-1.20	10.1	2.7	16	LA
JHBCGD	123.1 X	109.7	112.4	117.8	115.7	1.78	8.1	5.9	115.8	2.17 *	9.9	5.6	16	LC
JTUTAK	109.3	111.9	105.8	107.2	108.5	-0.56	9.5	2.7	108.6	-0.48	10.4	2.1	16	LB
K78NYF	102.8 *	107.9	106.4	106.9	106.0	-1.38	10.6	2.2	107.1	-1.02	11.1	2.4	16	LA
KLNJEC	109.2	114.7	113.5	113.4	112.7	0.79	7.3	2.4	109.9	-0.01	9.3	2.6	16	TP
KP8BPE	106.8	106.2 L	112.8 L	109.3	108.8	-0.48	6.8	3.0	109.8	-0.06	8.3	5.3	16	LC



**Containerboard Interlaboratory Testing Program**  
 Analysis 205  
**Bursting Strength (Mullen), 42 lb Linerboard - 42D1**  
 TAPPI Official Test Method T807

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
MDKCR8	102.9 *	101.3 *	110.0	100.4 *	103.7	-2.15 *	9.5	4.4	107.6	-0.86	11.1	5.1	16	AH
MTXKTC	109.9	108.9	107.7	109.2	108.9	-0.44	10.6	0.9	108.7	-0.44	11.3	1.8	12	LC
NGXFWG	106.6	102.3	112.6	112.6	108.5	-0.56	11.6	5.0	107.5	-0.89	11.1	4.0	16	LC
NK34GC	113.0	104.7	107.9	105.2	107.7	-0.83	10.8	3.8	108.9	-0.37	10.3	5.4	16	LC
P2K689	115.0	100.8 *	108.9	106.3	107.7	-0.82	7.8	5.9	108.2	-0.65	9.8	4.4	14	LC
QPR2H9	110.8	109.1	110.8	107.0	109.4	-0.28	11.8	1.8	108.9	-0.39	11.9	1.8	16	LA
QTPPVA	114.6 L	112.0 L	113.1 L	113.2 L	113.2	0.96	4.1	1.1	112.7	1.01	9.1	2.7	16	XX
R46V84	104.3	113.1	114.1	115.3	111.7	0.47	7.1	5.0	108.6	-0.47	7.9	5.3	14	AX
REZ369	112.1	105.6	112.3	109.2	109.8	-0.15	7.8	3.2	107.6	-0.86	10.1	3.2	16	LZ
UC73Y9	109.4	109.4	109.2	109.4	109.4	-0.29	9.4	0.1 L	109.4	-0.21	8.7	0.1 L	16	LJ
V6KLK4	107.4	106.2	109.9	105.7	107.3	-0.96	12.6	1.9	109.2	-0.25	12.4	6.8 H	14	XX
VVXNX6	111.8	116.7	121.4 *	112.1	115.5	1.70	12.5	4.5	112.8	1.08	13.7	3.6	12	AX
W6Z8U7	108.5	108.0	110.5	114.5	110.4	0.04	9.7	3.0	109.0	-0.32	11.6	2.6	16	AH
WFWBXY	107.7	109.3	111.3	110.4	109.7	-0.19	9.3	1.6	109.0	-0.33	8.7	1.8	16	AH
WPMW4X	117.2	112.8	115.7	113.6	114.8	1.47	10.8	2.0	114.0	1.50	9.6	2.5	16	LA
XVP796	105.9	110.0	106.0	109.4	107.8	-0.79	10.3	2.2	106.4	-1.29	10.7	2.8	8	LJ
YFAK46	112.5	111.6	114.3	110.6	112.3	0.65	10.1	1.6	114.0	1.50	9.3	2.6	16	LC
Z33T2X	113.9	108.3 H	112.7 H	110.4	111.3	0.35	13.7	2.5	112.5	0.94	12.3	3.4	16	LC

Consensus (All Labs) Results														
Wk Mean	110.09	109.78	110.80	110.52	Month Mean	110.26			Grand Mean	109.91				
Avg SDr	10.42	10.59	10.36	9.53	Avg SDr	10.25			Avg SDr	10.49				
SD btwn Labs	3.59	4.02	4.17	4.24	SD btwn Labs	3.08			SD btwn Labs	2.71				
Labs Incl	51	53	52	53	SD btwn Wks	2.94			SD btwn Wks	3.66				
Labs Excl	2	0	1	0	Labs Incl	52			Labs Incl	53				
Labs not Rcvd	0	0	0	0										

**Key to Instrument Codes Reported by Participants**

AA	Perkins Model A	AH	Perkins Model AH
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LB	L&W Burst-O-Matic	LC	L&W Autoline
LJ	L&W Bursting Strength Tester J-Type	LZ	L&W (model not specified)
RE	Regmed/Mullen Tester	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab



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

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
2GC2BZ	127.9 *	123.8 *	130.6 *	121.5	126.0	2.39 *	12.3	4.1	126.0	2.39 *	12.3	4.1	4	LA
2KCC7Z	117.6	116.6	111.4	118.1	115.9	0.34	12.3	3.1	115.9	0.34	12.3	3.1	4	XX
4AAUNW	114.5	115.5	106.7	117.2	113.5	-0.16	11.0	4.6	113.5	-0.16	11.0	4.6	4	TB
4JYEUE	107.0	108.1	121.0	108.1	111.0	-0.66	9.3	6.7	111.0	-0.66	9.3	6.7 H	4	TB
4QGVHX	119.6	115.1	112.0	111.5	114.5	0.06	10.3	3.7	114.5	0.06	10.3	3.7	4	LZ
72NK9X	119.8	113.9	122.4	122.3	119.6	1.09	10.7	4.0	119.6	1.09	10.7	4.0	4	LA
7Q63GR	115.3	114.5	116.4	116.1	115.6	0.27	7.7	0.9	115.6	0.27	7.7	0.9	4	AH
87DGBU	119.3	112.3	104.8	113.0	112.3	-0.40	8.5	5.9	112.3	-0.40	8.5	5.9	4	AA
9FYXJV	120.5	115.9	119.0	120.7	119.0	0.98	10.9	2.2	119.0	0.98	10.9	2.2	4	TB
9HAM6T	113.3	110.6	108.9	120.6	113.4	-0.18	8.8	5.2	113.4	-0.18	8.8	5.2	4	LC
ACDFYP	119.9	115.1	118.5	119.6	118.3	0.82	8.0	2.2	118.3	0.82	8.0	2.2	4	AA
AME3QL	116.7	117.2	112.9	119.9	116.7	0.50	9.0	2.9	116.7	0.50	9.0	2.9	4	XX
BLZV8P	108.4	106.2	113.2	106.0 L	108.4	-1.19	8.9	3.3	108.4	-1.19	8.9	3.3	4	AH
CQAAPN	114.1	114.7 L	113.9 L	114.9 L	114.4	0.03	6.8	0.5 L	114.4	0.03	6.8	0.5 L	4	LA
CUAKKN	113.3	115.8	121.3	117.4	116.9	0.55	9.8	3.3	116.9	0.55	9.8	3.3	4	LA
DNYTQG	114.9 H	121.0	117.9	118.5	118.1	0.78	14.6	2.5	118.1	0.78	14.6	2.5	4	LA
FCX6RJ	102.8 *	110.5	109.5	107.8	107.7	-1.35	9.4	3.4	107.7	-1.35	9.4	3.4	4	LC
FQHKVH	124.0	116.1	116.7	114.9	117.9	0.75	9.4	4.1	117.9	0.75	9.4	4.1	4	LC
FRPY3N	111.6	116.5	122.4	116.2	116.7	0.50	11.7	4.4	116.7	0.50	11.7	4.4	4	LZ
G42PFK	114.0	114.4	114.9	118.0	115.3	0.22	14.0	1.8	115.3	0.22	14.0	1.8	4	LA
GCRALH	115.5	111.2	116.6	107.6	112.7	-0.31	10.1	4.1	112.7	-0.31	10.1	4.1	4	LA
GGM4JJ	107.2	117.6	113.2	119.1	114.3	0.00	8.8	5.4	114.3	0.00	8.8	5.4	4	LA
GR962E	114.0	118.7	118.7	106.4	114.5	0.04	10.5	5.8	114.5	0.04	10.5	5.8	4	AH
GWZCJM	107.7	112.4	113.2	117.5	112.7	-0.32	9.6	4.0	112.7	-0.32	9.6	4.0	4	LA
H2PALJ	113.7	118.1	113.8	115.1	115.2	0.19	9.0	2.1	115.2	0.19	9.0	2.1	4	AH
H6MXYK	111.2	109.2	110.0	118.8	112.3	-0.40	7.9	4.4	112.3	-0.40	7.9	4.4	4	LJ
HAGUMB	114.6 L	116.4	114.4	120.0	116.4	0.43	6.2	2.6	116.4	0.43	6.2	2.6	4	RE
HHCPPF	114.1	109.8	113.2	117.2	113.6	-0.14	11.9	3.0	113.6	-0.14	11.9	3.0	4	AH
HWWTCL	113.9	105.5	111.7	101.0 *	108.0	-1.27	11.2	5.9	108.0	-1.27	11.2	5.9	4	LA
JECZLD	110.3	111.9	106.4	112.1	110.2	-0.83	12.0	2.6	110.2	-0.83	12.0	2.6	4	LA
JHBCGD	104.4 H	119.8	117.3	109.9	112.9	-0.28	12.6	7.0	112.9	-0.28	12.6	7.0 H	4	LC
JTUTAK	110.7	109.7	106.8	104.0	107.8	-1.32	10.0	3.0	107.8	-1.32	10.0	3.0	4	LB
K78NYF	108.0	107.6	100.9 *	103.0	104.9	-1.92	11.4	3.5	104.9	-1.92	11.4	3.5	4	LA
KLNJEC	114.0	129.5 X	125.0	132.9 X	125.4	2.27 *	6.8	8.2 H	125.4	2.27 *	6.8	8.2 H	4	TP
KP8BPE	112.0	123.4 *L	122.8 L	120.9 L	119.8	1.13	6.2	5.3	119.8	1.13	6.2	5.3	4	LC



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

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
MDKCR8	108.1	108.3	113.3	114.0	110.9	-0.68	10.9	3.2	110.9	-0.68	10.9	3.2	4	AH
MTXKTC	106.3	110.8	108.7	111.6	109.3	-1.01	10.5	2.4	109.3	-1.01	10.5	2.4	4	LA
NGXFWG	117.2	107.7	116.7	116.9	114.6	0.08	10.4	4.6	114.6	0.08	10.4	4.6	4	LC
NK34GC	109.0	110.2	115.9	122.4	114.4	0.02	13.8	6.1	114.4	0.02	13.8	6.1	4	LC
P2K689	107.7	111.4	105.4	111.2	108.9	-1.09	9.5	2.9	108.9	-1.09	9.5	2.9	4	LC
QPR2H9	108.9	108.4	116.9	117.9	113.0	-0.25	13.5	5.1	113.0	-0.25	13.5	5.1	4	LA
QTPPVA	126.1 *L	128.3 X	124.5	124.7 L	125.9	2.38 *	5.3	1.8	125.9	2.38 *	5.3	1.8	4	XX
R46V84	118.4	118.5	113.6	115.7 H	116.5	0.47	11.2	2.4	116.5	0.47	11.2	2.4	4	AX
REZ369	115.4	118.2	116.8	113.9	116.1	0.37	10.3	1.8	116.1	0.37	10.3	1.8	4	LZ
UC73Y9	104.7	104.1 *	104.5	104.4	104.4	-2.01 *	8.0	0.2 L	104.4	-2.01 *	8.0	0.2 L	4	LJ
V6KLK4	95.0 X	108.8 H	103.9	102.8	102.6	-2.38 *	14.8	5.7	102.6	-2.38 *	14.8	5.7	4	XX
VVXNX6	114.1	113.9	119.4	113.4	115.2	0.19	10.7	2.8	115.2	0.19	10.7	2.8	4	AX
W6Z8U7	116.5	116.0	113.0	111.0	114.1	-0.03	9.4	2.6	114.1	-0.03	9.4	2.6	4	AH
WFWBXY	117.5	123.2 *	123.2 L	129.8 *L	123.4	1.87	4.9	5.0	123.4	1.87	4.9	5.0	4	AH
WPMW4X	111.8	114.8	111.1	114.0	112.9	-0.27	9.2	1.7	112.9	-0.27	9.2	1.7	4	LA
XVP796	114.4	110.6	109.8	110.6	111.3	-0.59	11.1	2.0	111.3	-0.59	11.1	2.0	4	LJ
YFAK46	116.9	114.5	120.0	112.9	116.1	0.37	10.5	3.1	116.1	0.37	10.5	3.1	4	LC
Z33T2X	110.6	118.8	112.1	114.3	114.0	-0.06	10.8	3.6	114.0	-0.06	10.8	3.6	4	LC

Consensus (All Labs) Results										
Wk Mean	113.64	113.79	114.47	114.55	Month Mean	114.25			Grand Mean	114.25
Avg SDr	10.28	10.31	10.59	10.08	Avg SDr	10.28			Avg SDr	10.28
SD btwn Labs	5.31	4.68	6.10	6.07	SD btwn Labs	4.89			SD btwn Labs	4.89
Labs Incl	52	51	53	52	SD btwn Wks	4.00			SD btwn Wks	4.00
Labs Excl	1	2	0	1	Labs Incl	53			Labs Incl	53
Labs not Rcvd	0	0	0	0						

**Key to Instrument Codes Reported by Participants**

AA	Perkins Model A	AH	Perkins Model AH
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LB	L&W Burst-O-Matic	LC	L&W Autoline
LJ	L&W Bursting Strength Tester J-Type	LZ	L&W (model not specified)
RE	Regmed/Mullen Tester	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab



**Containerboard Interlaboratory Testing Program**  
 Analysis 215  
**Ring Crush, 42 lb Linerboard - 42D1**  
 TAPPI Official Test Method T822

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2GC2BZ	87.8	88.9	89.7	89.6	89.0	0.73	2.7	0.9	88.7	0.45	2.4	0.7	16	LZ
32JTTR	86.4	No DATA	83.9	85.6	85.3	-0.18	3.7	1.3	87.8	0.24	4.5	3.0	15	XX
47T7BQ	92.9	91.3 L	91.6	91.7	91.9	1.44	2.5	0.7	89.0	0.52	2.7	2.2	16	WK
4AAUNW	84.6	81.2	81.3 H	83.3	82.6	-0.85	4.1	1.7	84.0	-0.68	4.1	2.5	15	LZ
4JYEUE	92.5	91.6	85.8	84.0	88.5	0.60	4.2	4.2	86.6	-0.05	4.3	3.4	15	LC
6WXQYR	88.1	89.4	87.6	89.9 L	88.7	0.66	4.1	1.1	88.6	0.43	3.7	0.9	16	LD
72NK9X	76.8 *	92.0	94.6 H	96.4 *	90.0	0.97	4.3	9.0 H	95.6	2.11 *	5.0	5.8 H	16	LC
7Q63GR	87.3	89.5	86.6	85.5	87.2	0.29	3.5	1.7	87.1	0.06	7.3	2.0	16	LC
9FYXJV	93.2	95.7	96.5 *	98.6 *	96.0	2.46 *	4.6	2.2	98.1	2.72 *	4.9	4.2	16	LX
9PPHPT	82.2	81.5	81.8	79.2	81.2	-1.20	3.0	1.3	82.4	-1.08	3.8	2.0	16	EN
ACDFYP	81.4	85.3	84.5	84.0	83.8	-0.55	4.0	1.7	84.6	-0.53	3.7	1.5	16	LD
AME3QL	89.8	74.9 *	83.2	86.0	83.5	-0.63	3.7	6.3 H	84.8	-0.48	3.9	3.7	16	LC
BLZV8P	84.8	82.0	87.8	87.3	85.5	-0.14	3.2	2.7	87.9	0.25	3.7	2.5	16	EM
C323VQ	70.2 X	67.0 X	77.3	80.6	73.8	-3.02 X	4.3	6.3 H	77.7	-2.20 *	4.3	5.1 H	12	MB
CDHMEM	90.9 L	91.0 L	91.0	92.4	91.3	1.30	1.7	0.7	92.2	1.29	1.6	1.4	16	TD
CQAAPN	83.4	84.9 L	84.4 L	84.9 L	84.4	-0.40	2.5	0.7	84.3	-0.62	3.0	0.9	16	LD
CUAKKN	92.7	91.9	88.6	91.3	91.1	1.26	4.2	1.8	90.7	0.92	4.7	2.6	16	LZ
CXLRHM	84.5	80.5	79.5	80.7	81.3	-1.17	5.7	2.2	82.3	-1.10	5.0	3.2	15	LC
DM4BPF	93.9	91.3	89.8	91.1	91.5	1.35	3.6	1.7	91.5	1.12	3.6	1.7	4	TH
DNYTQG	86.6	86.4	87.4	85.9	86.6	0.13	3.6	0.6	86.4	-0.12	3.3	1.6	16	EM
DYWU4L	85.8 L	84.9 L	85.5	86.5	85.7	-0.09	2.3	0.6	88.4	0.37	3.2	2.7	16	TH
FCX6RJ	87.3	89.1	86.2	89.8	88.1	0.50	4.1	1.7	87.0	0.03	3.6	1.5	16	LD
FEYDRM	81.9	82.0	84.4	82.6	82.7	-0.81	4.2	1.2	81.6	-1.26	4.3	2.7	16	LD
FQHKVH	92.5	90.5	90.0	91.5	91.1	1.26	3.8	1.1	91.9	1.21	8.6	3.1	14	LC
FRPY3N	83.8 L	86.0	85.4	86.4	85.4	-0.15	2.6	1.2	85.0	-0.45	3.2	1.6	15	LC
GGM4JJ	89.9	89.2	88.4	88.4	89.0	0.73	3.8	0.7	88.5	0.39	3.6	2.1	16	LD
GJCBYA	61.9 X	60.8 XL	61.2 X	64.4 XL	62.1	-5.92 X	2.0	1.6	67.3	-4.72 X	2.1	4.6	16	XX
GWZCJM	90.3	83.5	82.3	89.3	86.4	0.08	4.2	4.0	90.8	0.95	4.5	4.4	16	LC
H2PALJ	83.2	83.1	84.7	82.0	83.2	-0.69	3.7	1.1	84.9	-0.47	3.4	2.0	16	LD
H6MXYK	79.6	77.1	79.0 L	76.4 *	78.0	-1.98	4.1	1.5	77.7	-2.22 *	3.3	3.0	16	LC
HAGUMB	80.9 L	81.6	82.1	81.7	81.6	-1.10	2.6	0.5 L	85.3	-0.36	3.4	4.5	16	LZ
JA2M4E	91.3	88.2	87.8	85.9	88.3	0.56	3.7	2.3	89.4	0.63	3.7	1.5	16	LD
JECZLD	84.6	85.8	86.0	85.5	85.5	-0.14	3.9	0.6	84.4	-0.58	3.9	1.2	12	LD
JHBCGD	89.1	90.5	90.7	88.1	89.6	0.88	4.3	1.2	86.8	-0.02	4.4	2.3	16	LC
JL6F7B	79.6	77.8	82.1	80.9	80.1	-1.46	3.8	1.8	81.6	-1.26	4.0	3.1	16	EM



**Containerboard Interlaboratory Testing Program**  
 Analysis 215  
**Ring Crush, 42 lb Linerboard - 42D1**  
 TAPPI Official Test Method T822

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
JTUTAK	83.7	85.7	86.0	88.3	85.9	-0.03	3.3	1.9	87.0	0.04	3.6	2.5	16	LC
K2WBGG	76.5 *	77.8	80.3	79.7	78.6	-1.84	2.8	1.8	78.9	-1.91	2.3	1.0	16	EM
K78NYF	84.9	85.7	84.4	84.5	84.9	-0.29	3.7	0.6	85.4	-0.34	4.1	1.5	16	LD
KLNJEC	87.4	85.6	87.7	87.5	87.1	0.25	4.2	0.9	86.9	0.02	3.8	0.9	16	TH
MDKCR8	85.8	93.7	80.8	85.2	86.4	0.08	4.3	5.4	87.7	0.20	4.7	4.2	16	LC
MTXKTC	139.2 X	89.4	81.3	86.3	99.0	3.21 X	3.6	27.0 H	91.7	1.18	4.9	16.0 H	11	LZ
NK34GC	93.0	88.3	88.9	87.8	89.5	0.85	4.0	2.4	89.6	0.67	5.6	7.2 H	16	LC
P2K689	85.6	83.4	89.8	83.8	85.6	-0.10	4.0	2.9	88.2	0.32	3.7	3.8	14	LD
QM22Z4	89.0	85.2	85.9	87.1	86.8	0.19	5.0	1.7	86.1	-0.19	4.7	2.1	12	TH
QPR2H9	81.6	81.6	82.9	83.1	82.3	-0.92	4.3	0.8	84.8	-0.49	4.1	7.1 H	16	LD
QTPPVA	79.2	74.7 *	74.5 *	91.2	79.9	-1.51	4.4	7.8 H	84.8	-0.50	4.0	5.1 H	16	LD
QYVHP6	84.8	92.5	90.2	92.4	90.0	0.97	3.8	3.6	89.4	0.61	4.2	2.1	16	EM
R46V84	94.1	91.2	93.5	90.9	92.4	1.58	3.9	1.6	94.3	1.79	3.7	2.6	14	LZ
REZ369	86.4	80.1	81.2	80.8	82.1	-0.97	4.1	2.9	86.6	-0.06	4.0	3.8	16	LC
UC73Y9	85.3 H	78.0	77.1	79.1 H	79.9	-1.52	8.3	3.7	85.6	-0.31	6.0	3.8	16	LD
UYYCWZ	82.7	84.5	80.8	83.0	82.8	-0.81	4.0	1.5	81.8	-1.21	3.7	2.2	16	EM
VVXNX6	85.0	78.8	81.5	74.4 *H	79.9	-1.50	5.5	4.5	81.8	-1.21	4.7	4.2	12	LC
WAVY23	95.7 *	94.1	90.0	88.5	92.1	1.49	3.8	3.4	93.7	1.66	3.9	3.0	16	MB
WPMW4X	88.0	90.5	89.5	90.0	89.5	0.85	3.7	1.1	92.1	1.27	3.2	2.4	16	LD
Z33T2X	86.6	85.8	81.6	88.6	85.6	-0.10	4.4	2.9	86.1	-0.18	3.8	2.8	16	LD
ZGZ6A2	84.0	85.8 L	84.0 L	85.2	84.7	-0.32	1.9	0.9	85.3	-0.38	2.6	1.8	16	LD

Consensus (All Labs) Results														
Wk Mean	86.39	85.80	85.52	86.18	Month Mean	86.03			Grand Mean	86.84				
Avg SDr	4.19	4.02	3.85	3.80	Avg SDr	3.97			Avg SDr	4.17				
SD btwn Labs	4.56	5.20	4.55	4.72	SD btwn Labs	4.05			SD btwn Labs	4.15				
Labs Incl	53	52	54	54	SD btwn Wks	2.79			SD btwn Wks	3.15				
Labs Excl	2	2	1	1	Labs Incl	53			Labs Incl	54				
Labs not Rcvd	0	1	0	0										



Containerboard Interlaboratory Testing Program  
Analysis 215  
**Ring Crush, 42 lb Linerboard - 42D1**

**Report #562 (H)**  
**July 2016**

**Key to Instrument Codes Reported by Participants**

<b>EM</b>	Emerson 1200	<b>EN</b>	Emerson 2200
<b>LC</b>	L&W Crush Tester 48	<b>LD</b>	L&W Crush Tester 248
<b>LX</b>	L&W 506	<b>LZ</b>	L&W Crush Tester (model not specified)
<b>MB</b>	Messmer Buchel K440	<b>TD</b>	TMI Digital Crush Tester, Model 17-09
<b>TH</b>	TMI Compression Tester, Model 17-76	<b>WK</b>	Zwick Z005 Crush Tester
<b>XX</b>	Instrument make/model not specified by lab		





Containerboard Interlaboratory Testing Program

Analysis 216

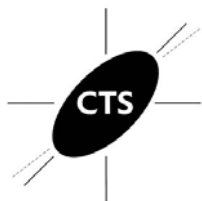
Ring Crush, 56 lb Linerboard - 56A1

TAPPI Official Test Method T822

Report #562 (H)

July 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2GC2BZ	144.4	144.3	147.9 *	144.2	145.2	1.72	4.6	1.8	145.2	1.72	4.6	1.8	4	LZ
32JTTR	132.3	No DATA	134.4	140.9 L	135.9	0.12	4.2	4.5	135.9	0.12	4.2	4.5	3	XX
47T7BQ	136.5 L	135.0	133.8	133.2	134.6	-0.09	2.7	1.4	134.6	-0.09	2.7	1.4	4	WK
4AAUNW	134.2	129.2	137.7 H	135.3	134.1	-0.19	5.0	3.6	134.1	-0.19	5.0	3.6	4	LZ
4JYEUE	141.1	143.9	135.2	138.6	139.7	0.78	6.3	3.7	139.7	0.78	6.3	3.7	4	LC
6WXQYR	139.3 L	136.7	137.1	139.9	138.2	0.52	4.1	1.6	138.2	0.52	4.1	1.6	4	LD
72NK9X	147.4	143.6	146.9	154.5 *	148.1	2.22 *	6.2	4.6	148.1	2.22 *	6.2	4.6	4	LC
7Q63GR	134.7	140.0	135.5	143.3	138.4	0.55	4.3	4.0	138.4	0.55	4.3	4.0	4	LC
9FYXJV	151.9 *	152.3 *	153.5 X	152.9 *	152.7	3.01 X	5.8	0.7	152.7	3.01 X	5.8	0.7	4	LX
9PPHPT	130.7	127.1	129.6	129.0	129.1	-1.05	3.6	1.5	129.1	-1.05	3.6	1.5	4	EN
ACDFYP	128.1	126.5	128.7	128.6	128.0	-1.24	3.8	1.0	128.0	-1.24	3.8	1.0	4	LD
AME3QL	137.2	133.8	135.0	132.8	134.7	-0.08	4.5	1.9	134.7	-0.08	4.5	1.9	4	LC
BLZV8P	133.2	127.4	134.5	137.6	133.2	-0.35	3.6	4.3	133.2	-0.35	3.6	4.3	4	EM
C323VQ	111.0 X	109.3 X	110.7 X	112.3 X	110.8	-4.20 X	4.9	1.2	110.8	-4.20 X	4.9	1.2	4	MB
CDHMEM	133.9	132.2	136.3 L	132.9	133.8	-0.23	2.7	1.8	133.8	-0.23	2.7	1.8	4	TD
CQAAPN	129.7 L	133.5 L	131.1	131.1	131.3	-0.66	2.4	1.6	131.3	-0.66	2.4	1.6	4	LD
CUAKKN	140.4	142.3	137.0	140.5	140.1	0.84	5.6	2.2	140.1	0.84	5.6	2.2	4	LZ
CXLRHM	132.1	124.7	128.2	127.4	128.1	-1.22	4.6	3.1	128.1	-1.22	4.6	3.1	4	LC
DM4BPF	136.4	139.8	144.6	139.7	140.1	0.85	5.5	3.4	140.1	0.85	5.5	3.4	4	TH
DNYTQG	131.4	138.9	132.8	130.1	133.3	-0.33	4.3	3.9	133.3	-0.33	4.3	3.9	4	EM
DYWU4L	140.8	139.5	140.1	140.4	140.2	0.86	5.1	0.6 L	140.2	0.86	5.1	0.6 L	4	TH
FCX6RJ	142.9	142.2	140.9	141.3	141.8	1.14	5.1	0.9	141.8	1.14	5.1	0.9	4	LD
FEYDRM	132.3	129.0	128.8	129.2	129.8	-0.92	4.1	1.7	129.8	-0.92	4.1	1.7	4	LD
FQHKVH	147.9	145.4	143.3	145.4	145.5	1.78	4.9	1.9	145.5	1.78	4.9	1.9	4	LC
FRPY3N	129.6	137.3	130.8	133.6	132.8	-0.41	3.6	3.4	132.8	-0.41	3.6	3.4	4	LY
GGM4JJ	141.5 L	139.6	142.8	138.4	140.6	0.93	3.2	2.0	140.6	0.93	3.2	2.0	4	LD
GJCBYA	104.3 X	103.9 XL	103.1 X	103.2 X	103.6	-5.43 X	2.7	0.6 L	103.6	-5.43 X	2.7	0.6 L	4	XX
GWZCJM	139.1	133.9	129.8	138.5	135.3	0.02	4.8	4.4	135.3	0.02	4.8	4.4	4	LC
H2PALJ	131.8	133.6	131.4	131.0	131.9	-0.56	4.2	1.1	131.9	-0.56	4.2	1.1	4	LD
H6MXYK	123.7	115.9 *	126.1 L	120.2 *	121.5	-2.36 *	3.5	4.4	121.5	-2.36 *	3.5	4.4	4	LC
HAGUMB	131.0	129.4	129.4	128.7	129.6	-0.96	3.4	1.0	129.6	-0.96	3.4	1.0	4	LZ
JA2M4E	141.5	142.7	138.6	137.3	140.0	0.83	4.6	2.5	140.0	0.83	4.6	2.5	4	LD
JECZLD	136.5	135.8	135.2	134.5	135.5	0.06	3.8	0.9	135.5	0.06	3.8	0.9	4	LD
JHBCGD	139.1	140.8	140.1	137.4	139.4	0.72	4.6	1.5	139.4	0.72	4.6	1.5	4	LC
JL6F7B	123.5	127.7	128.0	124.7	126.0	-1.59	5.2	2.2	126.0	-1.59	5.2	2.2	4	EM



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

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
JTUTAK	133.6	132.9	139.9	139.2	136.4	0.21	4.8	3.7	136.4	0.21	4.8	3.7	4	LC
K2WBGG	124.5	129.0	131.2	129.8	128.6	-1.13	3.5	2.9	128.6	-1.13	3.5	2.9	4	EM
K78NYF	134.0	134.4	133.5	131.8	133.4	-0.30	4.0	1.1	133.4	-0.30	4.0	1.1	4	LD
KLNJEC	135.4	130.2	129.6	132.4	131.9	-0.57	4.7	2.6	131.9	-0.57	4.7	2.6	4	TH
MDKCR8	126.0	129.4	126.5	127.8 H	127.4	-1.34	6.1	1.5	127.4	-1.34	6.1	1.5	4	LC
MTXKTC	126.5 H	135.0	142.4	139.0	135.7	0.09	6.8	6.9 H	135.7	0.09	6.8	6.9 H	4	LZ
NK34GC	138.8	140.2	NO DATA	146.4	141.8	1.14	5.3	4.1	141.8	1.14	5.3	4.1	3	LC
P2K689	136.1	120.3 *	130.3	131.8	129.6	-0.96	3.5	6.7 H	129.6	-0.96	3.5	6.7 H	4	LD
QM22Z4	136.0	131.0	134.0	138.2	134.8	-0.07	5.3	3.1	134.8	-0.07	5.3	3.1	4	TH
QPR2H9	128.0	133.5	131.6	134.2	131.8	-0.58	4.9	2.8	131.8	-0.58	4.9	2.8	4	LD
QTPPVA	132.9	125.9	128.0	143.2	132.5	-0.46	5.0	7.7 H	132.5	-0.46	5.0	7.7 H	4	LD
QYVHP6	140.1	142.4	145.1	142.0	142.4	1.24	5.9	2.0	142.4	1.24	5.9	2.0	4	EM
R46V84	139.8	140.6	143.9	135.5 L	139.9	0.82	5.1	3.5	139.9	0.82	5.1	3.5	4	LZ
REZ369	134.1	131.6	126.1	122.1	128.5	-1.16	4.8	5.4	128.5	-1.16	4.8	5.4 H	4	LC
UC73Y9	132.1	132.1	132.1 H	132.1	132.1	-0.53	6.6	0.0 L	132.1	-0.53	6.6	0.0 L	4	LD
UYYCWZ	133.8	133.9	136.1	130.1	133.5	-0.30	3.2	2.5	133.5	-0.30	3.2	2.5	4	EM
VVXNX6	138.3 H	134.3	129.4	121.6 H	130.9	-0.74	13.5	7.2 H	130.9	-0.74	13.5	7.2 H	4	LC
WAVY23	145.8	146.9	145.6	146.2	146.1	1.88	5.6	0.6 L	146.1	1.88	5.6	0.6 L	4	MB
WPMW4X	145.8	146.9	147.1	147.6	146.9	2.01 *	4.4	0.8	146.9	2.01 *	4.4	0.8	4	LD
Z33T2X	133.4	134.1	136.1	132.8	134.1	-0.19	5.1	1.4	134.1	-0.19	5.1	1.4	4	LD
ZGZ6A2	129.9 L	132.0 L	131.2	130.6	130.9	-0.74	2.2	0.9	130.9	-0.74	2.2	0.9	4	LD

Consensus (All Labs) Results														
Wk Mean	135.57	135.10	135.21	135.70	Month Mean	135.19			Grand Mean	135.19				
Avg SDr	5.46	4.65	4.53	5.14	Avg SDr	4.95			Avg SDr	4.95				
SD btwn Labs	6.31	7.11	6.09	7.35	SD btwn Labs	5.81			SD btwn Labs	5.81				
Labs Incd	54	53	52	54	SD btwn Wks	3.27			SD btwn Wks	3.27				
Labs Exclcd	2	2	3	2	Labs Incd	53			Labs Incd	53				
Labs not Rcvd	0	1	1	0										



Containerboard Interlaboratory Testing Program  
Analysis 216  
**Ring Crush, 56 lb Linerboard - 56A1**

**Report #562 (H)**  
**July 2016**

**Key to Instrument Codes Reported by Participants**

<b>EM</b>	Emerson 1200	<b>EN</b>	Emerson 2200
<b>LC</b>	L&W Crush Tester 48	<b>LD</b>	L&W Crush Tester 248
<b>LX</b>	L&W 506	<b>LY</b>	L&W Crush Tester 958
<b>LZ</b>	L&W Crush Tester (model not specified)	<b>MB</b>	Messmer Buchel K440
<b>TD</b>	TMI Digital Crush Tester, Model 17-09	<b>TH</b>	TMI Compression Tester, Model 17-76
<b>WK</b>	Zwick Z005 Crush Tester	<b>XX</b>	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program  
Analysis 223

Report #562 (H)  
July 2016

STFI, 42 lb Linerboard - 42D1  
TAPPI Provisional Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
2KCC7Z	23.0	25.3 *	24.2	24.8	24.3	1.36	2.6	1.0	24.6	1.56	1.9	0.8	16	XX
32JTTR	23.2 L	20.6 L	23.0 L	22.8 L	22.4	0.08	0.1	1.2	23.4	0.68	0.1	1.1	16	XX
47T7BQ	25.0	25.1	24.6	25.1	24.9	1.78	1.2	0.2	24.1	1.21	1.2	0.6	16	LZ
4AAUNW	21.0	22.9	21.4	21.6	21.7	-0.37	1.7	0.8	21.4	-0.84	1.7	0.5	16	LZ
4JYEUE	21.5	23.7	22.4	21.5	22.3	-0.01	1.7	1.0	22.5	-0.03	1.9	0.6	16	LW
4QGVHX	21.4	22.9	22.0	21.0	21.8	-0.30	2.2	0.8	23.0	0.39	2.0	1.0	16	LZ
6WXQYR	21.4	21.8	20.9	21.1	21.3	-0.65	2.0	0.4	21.5	-0.83	2.0	0.5	16	LY
72NK9X	24.8	26.0 *	25.1 *	24.6	25.1	1.89	2.0	0.6	24.8	1.71	1.9	0.8	16	LU
7N367Y	23.9	22.6	24.0	23.1	23.4	0.75	1.8	0.7	28.8	4.85 X	1.5	9.6 H	16	LU
7Q63GR	21.8	21.5	21.1	21.9	21.6	-0.46	1.7	0.3	21.5	-0.80	1.7	0.5	16	LU
962W7Q	21.6	22.3 H	21.9	21.8	21.9	-0.25	8.7	0.3	21.6	-0.68	4.5	0.4	16	LW
9HAM6T	21.1 L	23.4 L	21.8 L	24.4 L	22.7	0.27	0.5	1.5	22.8	0.22	0.5	1.0	12	LA
9PPHPT	20.2	19.4 *	20.7	20.6	20.2	-1.38	1.9	0.6	20.6	-1.50	1.8	0.8	16	LY
ACDFYP	20.7	20.7	20.6	21.0	20.8	-1.01	2.1	0.2	20.8	-1.35	1.8	0.3 L	16	LW
AME3QL	21.5	21.2	21.4	21.5	21.4	-0.59	1.5	0.1 L	21.6	-0.69	1.7	0.6	16	LU
AVBXTQ	21.0 L	20.9 L	19.5 L	20.0 L	20.3	-1.30	0.0	0.7	20.8	-1.29	0.0	0.9	16	LW
CUAKKN	21.0	21.4	21.8	21.7	21.5	-0.54	1.9	0.4	21.5	-0.78	1.8	0.5	16	LW
DM4BPF	23.1	23.8	23.4	23.6	23.5	0.78	2.0	0.3	24.8	1.74	2.0	2.0	8	TT
DNYTQG	21.8	22.9	23.0	20.5	22.1	-0.16	1.7	1.2	23.2	0.54	2.0	1.3	16	LZ
FCX6RJ	21.2	22.5	21.9	22.8	22.1	-0.12	2.3	0.7	22.3	-0.19	1.7	0.5	16	LA
FEYDRM	21.2	21.9	21.1	21.8	21.5	-0.52	1.9	0.4	21.3	-0.91	1.9	0.6	16	LY
FQHKVH	26.0 *L	27.3 XL	25.4 *L	25.3 L	26.0	2.47 *	0.0	0.9	25.5	2.27 *	0.0	0.9	14	LA
FRPY3N	21.1	21.3	20.9	21.0	21.1	-0.81	1.8	0.2	21.5	-0.79	1.9	0.6	15	LW
GCRALH	22.8	24.0	24.1	23.9	23.7	0.94	2.7	0.6	23.7	0.94	2.3	0.6	15	LW
GGM4JJ	21.2	21.2 L	21.9	20.9	21.3	-0.67	1.1	0.4	21.3	-0.93	1.4	0.4	16	BK
GR962E	20.8	22.7	21.8	21.6	21.7	-0.38	1.7	0.8	22.3	-0.14	1.8	0.9	8	LU
GWZCJM	20.7 L	19.4 *L	18.1 *L	20.8 L	19.8	-1.69	0.0	1.3	20.2	-1.75	0.0	1.1	16	LW
H2PALJ	21.2	21.3	21.4	21.3	21.3	-0.68	2.2	0.1 L	21.6	-0.71	2.0	0.4	16	LU
HHCPPF	23.6	23.3	21.6	NO DATA	22.8	0.36	1.6	1.1	23.1	0.45	1.8	0.8	15	LU
HWWCTL	24.2	24.2	27.5 X	26.5 *	25.6	2.21 *	2.1	1.7 H	24.1	1.19	1.6	1.3	16	LU
JA2M4E	21.5	21.8	23.0	21.9	22.0	-0.17	1.8	0.7	22.8	0.18	1.8	1.5	16	LY
JECZLD	22.6	22.6	21.8	21.0	22.0	-0.19	1.8	0.7	21.7	-0.64	1.7	0.5	16	LW
JHBCGD	22.8 L	22.1 L	23.0 L	27.4 X	23.8	1.02	0.8	2.4 H	22.8	0.18	0.5	1.4	16	LA
JTUTAK	22.7	22.6	23.1	23.4	22.9	0.43	1.5	0.4	23.2	0.53	1.6	0.5	16	LU
JVU2CA	21.6	19.7	19.0 *	20.1	20.1	-1.47	1.5	1.1	21.0	-1.18	1.9	1.1	15	XX



Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D1

TAPPI Provisional Test Method T826

Report #562 (H)

July 2016

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
K78NYF	21.6	21.8	21.8	22.3	21.9	-0.28	2.0	0.3	21.5	-0.77	1.8	0.4	16	LY
KLNJEC	21.7 L	21.8 L	22.2	21.6	21.8	-0.31	1.0	0.3	21.9	-0.51	0.9	0.4	16	TT
KP8BPE	21.3 L	21.4 L	21.4 L	21.9 L	21.5	-0.53	0.4	0.3	21.2	-1.02	0.4	0.4	16	LA
MDKCR8	23.5 L	22.9 L	22.5	23.1	23.0	0.46	1.0	0.4	23.0	0.40	0.9	0.8	15	LY
MTXKTC	21.1 L	22.5 L	22.5 L	42.5 X	27.1	3.24 X	0.6	10.2H	23.4	0.64	0.5	6.1 H	12	LA
NGXFWG	22.2	23.3 L	22.4	21.8	22.4	0.08	1.9	0.7	22.9	0.25	1.9	1.0	16	LA
NK34GC	24.3 L	23.1 L	22.6 L	23.4 L	23.4	0.73	0.4	0.7	24.5	1.52	1.2	5.1 H	16	LA
P2K689	22.0	20.4	21.9	21.2	21.4	-0.60	2.4	0.7	21.9	-0.46	2.3	0.9	14	LZ
QPR2H9	19.6	20.4	19.5	18.6 *	19.5	-1.85	1.8	0.8	24.4	1.44	1.9	7.4 H	16	XX
REZ369	22.2	22.0	21.0	21.1	21.6	-0.47	1.9	0.6	22.3	-0.21	1.8	0.7	16	LW
VVXNX6	19.6	21.0	19.6	19.7	20.0	-1.54	1.6	0.6	21.0	-1.19	1.9	1.2	12	XX
WAVY23	21.1 L	21.7 L	22.3 L	22.8 L	22.0	-0.20	0.1	0.7	22.3	-0.14	0.1	0.5	16	LA
WFWBXY	22.3	22.2 L	22.2	22.0	22.2	-0.07	1.1	0.1 L	22.4	-0.12	0.9	0.3 L	16	TT
WPMW4X	23.9	23.9	24.4	24.0	24.0	1.18	1.8	0.2	23.8	0.96	2.1	0.6	16	LA
XVP796	22.4 L	23.0 L	22.8 L	22.4 L	22.7	0.26	0.0	0.3	21.6	-0.68	0.0	1.2	8	LU
YFAK46	25.7 *	26.7 X	24.3	25.0	25.4	2.11 *	2.1	1.0	25.2	2.02 *	2.0	0.8	16	LA
Z33T2X	23.8	23.5	21.7	22.4	22.8	0.37	1.4	0.9	22.7	0.12	1.9	0.9	16	LA

Consensus (All Labs) Results									
Wk Mean	22.16	22.27	22.08	22.21	Month Mean	22.28	Grand Mean	22.53	
Avg SDr	1.69	2.87	1.65	1.68	Avg SDr	2.06	Avg SDr	1.73	
SD btwn Labs	1.45	1.43	1.51	1.62	SD btwn Labs	1.50	SD btwn Labs	1.30	
Labs Incd	52	50	51	49	SD btwn Wks	0.80	SD btwn Wks	1.73	
Labs Excl	0	2	1	2	Labs Incd	51	Labs Incd	51	
Labs not Rcvd	0	0	0	1					

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program  
Analysis 224

Report #562 (H)  
July 2016

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

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2KCC7Z	36.2	37.9 *	36.5	37.2	36.9	1.86	3.1	0.8	36.9	1.86	3.1	0.8	4	LU
32JTTR	33.9 L	33.5 L	33.5 L	33.2 L	33.5	0.07	0.1	0.3	33.5	0.07	0.1	0.3	4	XX
47T7BQ	35.5	35.1	35.3	35.9	35.5	1.09	2.0	0.3	35.5	1.09	2.0	0.3	4	LZ
4AAUNW	31.2	32.8	33.3	33.1	32.6	-0.40	2.5	0.9	32.6	-0.40	2.5	0.9	4	LZ
4JYEUE	32.8	35.0	34.0	33.3	33.8	0.22	2.9	0.9	33.8	0.22	2.9	0.9	4	LW
4QGVHX	38.0 *	34.2	34.7	33.6	35.1	0.92	3.5	2.0	35.1	0.92	3.5	2.0	4	LZ
6WXQYR	31.1	31.1	32.0	32.9	31.8	-0.82	2.6	0.9	31.8	-0.82	2.6	0.9	4	LY
72NK9X	35.7	36.6	35.1	37.9 *	36.3	1.54	3.3	1.2	36.3	1.54	3.3	1.2	4	LU
7N367Y	34.3	31.1	34.2	33.1	33.2	-0.10	2.8	1.5	33.2	-0.10	2.8	1.5	4	LU
7Q63GR	31.8	33.6	32.8	32.6	32.7	-0.35	2.5	0.8	32.7	-0.35	2.5	0.8	4	LU
962W7Q	31.6	31.1	33.4	32.0	32.0	-0.70	1.9	1.0	32.0	-0.70	1.9	1.0	4	LW
9HAM6T	32.6 L	35.1 L	36.9 *	37.0 L	35.4	1.06	1.4	2.1	35.4	1.06	1.4	2.1	4	LA
9PPHPT	30.5	31.7	30.9	31.3	31.1	-1.18	2.3	0.5	31.1	-1.18	2.3	0.5	4	LY
ACDFYP	30.2	30.4	30.9	30.3	30.4	-1.51	2.6	0.3	30.4	-1.51	2.6	0.3	4	LW
AME3QL	33.0	32.0	32.2	32.8	32.5	-0.45	2.8	0.5	32.5	-0.45	2.8	0.5	4	LU
AVBXTQ	32.8 L	30.2 L	29.2 *L	30.3 L	30.6	-1.41	0.0	1.5	30.6	-1.41	0.0	1.5	4	LW
CUAKKN	31.7	33.1	32.6	33.5	32.7	-0.34	3.2	0.8	32.7	-0.34	3.2	0.8	4	LW
DM4BPF	35.9	34.7	34.4	35.3	35.1	0.89	2.5	0.6	35.1	0.89	2.5	0.6	4	TT
DNYTQG	33.7	32.9	32.8	32.6	33.0	-0.19	2.8	0.5	33.0	-0.19	2.8	0.5	4	LZ
FCX6RJ	34.5	33.6	34.8	33.2	34.0	0.34	2.4	0.8	34.0	0.34	2.4	0.8	4	LA
FEYDRM	32.9	33.3	30.5	32.0	32.2	-0.61	2.8	1.2	32.2	-0.61	2.8	1.2	4	LY
FQHKVH	37.2 L	36.1 L	36.2 L	37.3 L	36.7	1.73	0.0	0.6	36.7	1.73	0.0	0.6	4	LA
FRPY3N	32.0	32.2	32.2	31.0	31.8	-0.79	2.1	0.6	31.8	-0.79	2.1	0.6	4	LW
GCRALH	35.0	33.5	34.5	34.6	34.4	0.54	3.9	0.6	34.4	0.54	3.9	0.6	4	LW
GGM4JJ	33.0	32.1	32.3	33.8	32.8	-0.29	1.8	0.8	32.8	-0.29	1.8	0.8	4	BK
GR962E	32.4	33.5	34.2	34.5	33.7	0.15	2.7	0.9	33.7	0.15	2.7	0.9	4	LU
GWZCJM	29.7 L	34.0 L	31.7 L	30.5 L	31.5	-0.98	0.0	1.9	31.5	-0.98	0.0	1.9	4	LW
H2PALJ	31.6	32.0	32.1	30.5	31.5	-0.95	3.1	0.8	31.5	-0.95	3.1	0.8	4	LU
HHCPPF	33.6	35.8	32.8	NO DATA	34.0	0.35	3.9	1.5	34.0	0.35	3.9	1.5	3	LU
HWWCTL	36.4	36.7	39.9 X	38.2 *	37.8	2.31 *	3.0	1.6	37.8	2.31 *	3.0	1.6	4	LU
JA2M4E	31.3	32.9	32.8	32.5	32.4	-0.52	3.0	0.7	32.4	-0.52	3.0	0.7	4	LY
JECZLD	32.6	31.4	32.5	33.2	32.4	-0.47	2.4	0.7	32.4	-0.47	2.4	0.7	4	LW
JHBCGD	34.2 L	32.1 L	32.4 L	33.5 L	33.0	-0.17	0.6	1.0	33.0	-0.17	0.6	1.0	4	LA
JTUTAK	33.9	32.7	32.4	32.7	32.9	-0.22	2.5	0.7	32.9	-0.22	2.5	0.7	4	LU
JVU2CA	32.7	31.4	27.4 X	32.3	30.9	-1.26	2.9	2.4	30.9	-1.26	2.9	2.4	4	XX



Containerboard Interlaboratory Testing Program  
Analysis 224

Report #562 (H)  
July 2016

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

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
K78NYF	32.1	32.1	32.6	32.9	32.4	-0.49	2.2	0.4	32.4	-0.49	2.2	0.4	4	LY
KLNJEC	31.2	30.7	30.7	30.2	30.7	-1.38	1.7	0.4	30.7	-1.38	1.7	0.4	4	TT
KP8BPE	31.5 L	33.4 L	33.2 L	32.1 L	32.6	-0.41	0.7	0.9	32.6	-0.41	0.7	0.9	4	LA
MDKCR8	34.4	37.4 *	33.3	33.4	34.6	0.65	2.2	1.9	34.6	0.65	2.2	1.9	4	LY
MTXKTC	34.9 L	33.8 L	33.0 L	49.1 X	37.7	2.26 *	0.9	7.6 H	37.7	2.26 *	0.9	7.6 H	4	LA
NGXFWG	32.5	32.3	33.4	34.4	33.1	-0.12	2.4	1.0	33.1	-0.12	2.4	1.0	4	LA
NK34GC	33.7 L	34.9 L	34.5	35.3	34.6	0.65	1.1	0.7	34.6	0.65	1.1	0.7	4	LA
P2K689	32.9	29.2	32.7	30.5	31.3	-1.06	2.0	1.8	31.3	-1.06	2.0	1.8	4	LZ
QPR2H9	30.6	31.1	30.9	29.9	30.6	-1.44	2.3	0.5	30.6	-1.44	2.3	0.5	4	XX
REZ369	32.9	33.1	32.6	32.9	32.9	-0.26	2.8	0.2 L	32.9	-0.26	2.8	0.2 L	4	LW
WAVY23	34.3 L	32.0 L	36.5 L	34.3 L	34.3	0.47	0.2	1.9	34.3	0.47	0.2	1.9	4	LA
WFWBXY	31.5	30.5	31.1	30.3 L	30.8	-1.32	1.4	0.6	30.8	-1.32	1.4	0.6	4	TT
WPMW4X	35.7	34.4	34.5	35.1	34.9	0.81	2.6	0.6	34.9	0.81	2.6	0.6	4	LA
XVP796	33.3 L	33.1 L	32.8 L	31.2 L	32.6	-0.40	0.0	1.0	32.6	-0.40	0.0	1.0	4	LU
YFAK46	37.2 *	37.9 *	35.2	38.5 *	37.2	1.99	3.5	1.4	37.2	1.99	3.5	1.4	4	LA
Z33T2X	35.2 L	35.4	34.7	33.3	34.7	0.68	1.8	0.9	34.7	0.68	1.8	0.9	4	LA

Consensus (All Labs) Results														
Wk Mean	33.32	33.26	33.22	33.30	Month Mean	33.36			Grand Mean	33.36				
Avg SDr	2.46	2.36	2.33	2.44	Avg SDr	2.42			Avg SDr	2.42				
SD btwn Labs	1.95	2.04	1.67	2.22	SD btwn Labs	1.93			SD btwn Labs	1.93				
Labs Incl	51	51	49	49	SD btwn Wks	1.53			SD btwn Wks	1.53				
Labs Excl	0	0	2	1	Labs Incl	51			Labs Incl	51				
Labs not Rcvd	0	0	0	1										

**Key to Instrument Codes Reported by Participants**

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



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

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
32JTTR	204.3	1.81	15.4	200.9	1.63	18.7	2	EV
4QGVHX	174.0	0.31	21.2	170.0	0.10	19.8	2	LA
634G2X	157.6	-0.50	12.3	157.6	-0.51	12.3	1	EV
72NK9X	144.8	-1.13	7.5	145.8	-1.10	14.9	2	LA
9PPHPT	143.0	-1.23	6.7	147.2	-1.03	13.3	2	EV
CUAKKN	174.5	0.34	16.5	182.2	0.70	13.3	2	EV
FQHKVH	171.7	0.19	23.1	167.4	-0.03	19.7	2	LA
GWZCJM	189.5	1.08	19.7	188.9	1.03	20.4	2	EV
H2PALJ	183.4	0.77	9.3	183.4	0.76	13.5	2	EV
HWWCTL	181.7	0.69	14.5	184.5	0.82	14.8	2	EV
JECZLD	147.3	-1.01	17.2	146.7	-1.05	15.4	2	EV
JHBCGD	209.0	2.04 *	17.2	216.0	2.38 *	28.6	2	LA
K78NYF	147.0	-1.03	14.5	143.2	-1.22	12.8	2	EV
KP8BPE	139.9	-1.38	10.0	150.4	-0.87	10.6	2	EV
MDKCR8	140.5	-1.35	8.3	136.0	-1.58	13.6	2	EV
MTXKTC	173.5	0.28	18.1	172.2	0.21	14.8	2	EV
NGXFWG	167.4	-0.02	20.1	157.5	-0.52	20.3	2	LA
NK34GC	162.1	-0.28	18.9	167.2	-0.04	19.0	2	LA
P2K689	177.3	0.47	14.4	177.3	0.46	14.4	1	LA
REZ369	171.8	0.20	9.9	169.4	0.07	15.8	2	EV
WAVY23	183.9	0.80	26.2	179.6	0.57	20.9	2	LA
WPMW4X	145.9	-1.08	18.5	151.9	-0.79	17.2	2	XX

Consensus (All Labs) Results			
Month Mean	167.73	Grand Mean	167.97
Avg SDr	16.27	Avg SDr	17.02
SD btwn Labs	20.21	SD btwn Labs	20.23
Labs Incd	22	Labs Incd	22

**Key to Instrument Codes Reported by Participants**

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





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

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
3H6AZV	365.4	-0.61	5.4	371.5	0.23	7.2	4	XX
7Q63GR	364.6	-0.63	6.1	368.2	-0.19	7.7	4	XX
9HAM6T	373.2	-0.37	5.8	364.7	-0.62	8.3	3	XX
FCX6RJ	446.7	1.91	0.8	428.4	7.34 X	3.9	4	XX
R46V84	394.9	0.30	4.8	382.4	1.59	8.2	4	XX
Z33T2X	365.6	-0.60	5.3	361.7	-1.00	6.9	4	XX

Consensus (All Labs) Results				
Month Mean	385.07		Grand Mean	369.69
Avg SDr	5.03		Avg SDr	7.67
SD btwn Labs	32.31		SD btwn Labs	8.00
Labs Incd	6		Labs Incd	5

**Key to Instrument Codes Reported by Participants**

XX Instrument make/model not specified by lab



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

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
4QGVHX	151.4	-0.33	17.0	146.4	-0.45	12.5	4	TM
4Z3WZT	156.4	-0.19	6.3	164.0	0.10	4.3	4	TM
72NK9X	154.0	-0.26	9.9	143.7	-0.53	6.6	4	TM
7Q63GR	181.5	0.48	4.8	183.0	0.70	5.0	4	HY
9HAM6T	153.4	-0.27	7.5	152.5	-0.26	6.7	3	SC
ACDFYP	178.0	0.39	5.7	175.2	0.46	7.2	4	TM
AME3QL	159.0	-0.12	9.9	162.9	0.07	8.4	4	XX
CQAAPN	171.7	0.22	2.6	176.3	0.49	4.3	4	SC
FCX6RJ	73.0	-2.43 *	0.8	82.0	-2.48 *	1.1	4	LZ
GWZCJM	247.0	2.24 *	6.7	223.3	1.97	16.7	4	SC
H2PALJ	150.0	-0.36	7.6	148.9	-0.37	8.1	4	TM
HWWCTL	126.2	-1.00	8.2	129.0	-1.00	8.4	4	TM
JECZLD	215.0	1.38	9.1	207.5	1.47	8.2	4	HY
JHBCGD	178.2	0.39	7.5	185.9	0.80	14.0	4	HY
K78NYF	188.0	0.66	24.1	155.8	-0.15	16.0	4	XX
MTXKTC	176.4	0.34	7.3	164.3	0.11	6.2	3	TM
VVXNX6	117.0	-1.25	4.3	122.6	-1.20	3.5	3	SC
XVP796	168.4	0.13	8.2	168.3	0.24	10.1	2	HZ

Consensus (All Labs) Results			
Month Mean	163.58	Grand Mean	160.63
Avg SDr	9.65	Avg SDr	9.18
SD btwn Labs	37.24	SD btwn Labs	31.75
Labs Incl	18	Labs Incl	18

**Consensus By Method**

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	165.43	30.80	1.85	14
Modified Scott Bond Mechanics	185.17	28.18	21.59	3

**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), 36 lb Linerboard - 36Z**  
 TAPPI Official Test Method T815

**Report #562 (H)**  
**July 2016**

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SDr	Mean	CPV	SDr	Months
2KCC7Z	26.0	-0.71	2.4	24.7	-1.28	2.1	4
4JYEUE	25.6	-0.89	2.3	25.7	-0.70	1.8	4
4QGVHX	28.0	0.17	3.2	29.3	1.42	3.5	4
72NK9X	26.0	-0.71	6.0	27.0	0.11	3.9	4
7Q63GR	24.0	-1.59	0.7	24.0	-1.67	1.8	4
9HAM6T	29.6	0.87	1.1	29.1	1.32	1.4	3
9PPHPT	28.1	0.23	0.7	26.9	0.03	1.5	4
ACDFYP	24.6	-1.34	3.3	25.6	-0.72	3.3	4
DNYTQG	29.3	0.74	2.2	26.8	0.00	2.1	4
FCX6RJ	29.8	0.96	0.8	28.3	0.83	0.8	4
GR962E	27.7	0.02	1.4	27.3	0.29	1.2	2
GWZCJM	26.8	-0.36	2.2	26.6	-0.17	2.4	4
H2PALJ	28.9	0.56	1.4	28.1	0.76	1.6	4
HWWCTL	25.8	-0.80	2.9	25.9	-0.56	3.0	4
JECZLD	25.2	-1.07	0.8	24.9	-1.14	1.1	4
JHBCGD	27.9	0.11	3.0	27.8	0.55	2.0	4
K78NYF	31.8	1.84	2.2	28.5	0.95	2.0	4
MTXKTC	32.0	1.93	2.1	29.3	1.47	2.7	3
REZ369	28.4	0.34	2.3	25.5	-0.78	1.7	4
WPMW4X	25.0	-1.15	1.9	24.0	-1.70	1.5	4
XQYVX7	29.6	0.87	1.1	28.5	0.97	1.2	4
<b>Consensus (All Labs) Results</b>							
Month Mean	27.62		Grand Mean	26.83			
Avg SDr	2.41		Avg SDr	2.19			
SD btwn Labs	2.27		SD btwn Labs	1.70			
Labs Incl	21		Labs Incl	21			

**Key to Instrument Codes Reported by Participants**

ZZ Instruments No Longer Tracked



Containerboard Interlaboratory Testing Program  
Analysis 237

Report #562 (H)  
July 2016

**Air Resistance, 36 lb Linerboard - 36Z**

TAPPI Official Test Method T460

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2GC2BZ	51.9	0.07	1.6	49.3	-0.97	2.4	4	XX
2KCC7Z	41.9	-6.11 X	2.3	41.0	-5.08 X	2.0	4	LA
32JTTR	50.4	-0.86	1.8	37.9	-6.62 X	1.4	4	LW
4JYEUU	53.8	1.25	1.9	53.1	0.90	2.1	4	LP
4QGVHX	52.0	0.13	3.5	47.0	-2.11 *	4.2	4	XX
6WXQYR	50.0	-1.11	0.8	49.7	-0.76	1.2	4	LP
72NK9X	53.2	0.85	1.5	52.4	0.59	1.8	4	LA
7Q63GR	52.6	0.51	3.3	52.7	0.69	2.9	4	TP
ACDFYP	51.2	-0.40	2.3	51.1	-0.08	3.2	4	HG
C727QJ	54.0	1.34	2.4	53.1	0.93	2.1	4	XX
CQAAPN	50.0	-1.13	1.5	50.5	-0.39	1.6	4	LP
FCX6RJ	54.9	1.95	1.6	53.8	1.26	2.0	4	LA
FQD3WK	52.0	0.14	1.6	51.5	0.12	1.5	2	LA
FQHKVH	53.5	1.03	3.8	52.8	0.77	2.6	4	TL
GWZCJM	50.8	-0.62	1.8	51.6	0.15	3.0	4	HG
HWWCTL	44.2	-4.73 X	1.9	44.3	-3.48 X	2.0	4	LA
JECZLD	50.4	-0.86	1.5	50.7	-0.28	1.9	4	LP
JHBCGD	50.9	-0.57	1.9	50.2	-0.51	1.5	4	LA
K78NYF	52.7	0.53	2.2	53.0	0.88	2.1	4	LP
MTXKTC	51.0	-0.52	1.9	51.6	0.19	1.8	3	LP
NK34GC	50.2	-0.99	1.4	50.2	-0.52	2.8	4	LA
QTPPVA	49.5	-1.42	2.9	47.0	-2.13 *	3.2	4	GG
WPMW4X	50.3	-0.91	3.3	50.4	-0.45	2.2	4	LA
XQYVX7	54.4	1.59	3.1	54.8	1.73	2.4	4	GA

**Consensus (All Labs) Results**

Month Mean	51.79	Grand Mean	51.26
Avg SDr	2.29	Avg SDr	2.41
SD btwn Labs	1.61	SD btwn Labs	2.01
Labs Incl	22	Labs Incl	21



Containerboard Interlaboratory Testing Program  
Analysis 237

Report #562 (H)  
July 2016

**Air Resistance, 36 lb Linerboard - 36Z**

TAPPI Official Test Method T460

**Key to Instrument Codes Reported by Participants**

<b>GA</b>	Gurley Precision #4340 Automatic Densometer	<b>GG</b>	Gurley Precision #4320 Densometer
<b>HG</b>	Technidyne - Hagerty Model #1 and Profile System	<b>LA</b>	L&W Autoline
<b>LP</b>	L&W Air Permeance Tester SE 166	<b>LW</b>	L&W Gurley Densometer, Oil Flotation
<b>TL</b>	Teledyne Gurley Densometer #4110, Oil Flotation	<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 #562 (H)  
July 2016

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

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	
2Z8UWX	60.8	61.4	59.7	59.3	60.3	0.53	1.6	1.0	60.8	0.87	1.6	0.6	16	LC
32JTTR	54.0	*H No DATA	38.8	X 56.1	49.6	-4.74	X 3.9	9.5	H 55.8	-1.84	4.2	5.4	H 15	XX
47T7BQ	59.3	58.5	58.7	59.4	59.0	-0.12	1.7	0.5	59.3	0.07	1.8	0.6	16	LC
4AAUNW	57.7	56.9	H 56.6	57.9	57.3	-0.96	3.6	0.6	58.5	-0.35	2.8	2.9	16	LZ
4JYEUE	61.8	61.8	60.3	59.9	60.9	0.85	2.3	1.0	61.3	1.14	2.2	1.5	15	LC
72NK9X	60.8	59.7	57.2	H 61.2	59.7	0.24	3.2	1.8	59.1	-0.05	3.7	1.6	16	LC
7Q63GR	60.2	59.1	58.7	60.2	59.5	0.14	2.7	0.8	60.5	0.74	2.6	1.4	16	LC
84CBZU	60.6	59.5	58.9	59.3	59.6	0.17	2.6	0.7	59.5	0.19	2.6	0.7	16	LD
97VMAK	59.2	57.5	58.4	58.7	58.5	-0.38	2.7	0.7	60.0	0.47	2.4	2.2	16	MB
9FYXJV	57.3	57.5	56.0	57.0	57.0	-1.12	2.4	0.7	55.6	-1.93	2.5	1.3	16	LD
A4ZJYN	63.7	61.4	61.5	61.2	61.9	1.33	2.3	1.2	61.9	1.49	2.2	0.8	16	LD
AME3QL	58.8	57.6	58.5	58.4	58.3	-0.45	2.0	0.5	60.2	0.56	1.9	3.4	16	LC
BLZV8P	60.2	No DATA	No DATA	No DATA	60.2	0.49	2.0	0.0	L 61.1	1.02	2.7	0.8	13	EM
C323VQ	62.4	59.7	62.8	61.9	L 61.7	1.22	2.7	1.4	57.4	-0.98	3.1	9.1	H 12	MB
C727QJ	58.7	61.6	61.0	61.7	60.8	0.75	2.1	1.4	60.7	0.83	2.2	1.1	16	LD
CDHMEM	63.8	65.1	*L 65.2	*L 62.6	L 64.2	2.44	* 1.1	1.3	62.7	1.90	1.2	1.7	16	TD
DM4BPF	50.5	X 50.1	X 48.7	X 50.9	X 50.0	-4.54	X 2.6	0.9	50.0	-4.98	X 2.6	0.9	4	TH
DNYTQG	57.0	58.6	58.7	59.1	58.4	-0.43	2.5	0.9	58.3	-0.49	2.3	1.3	16	LZ
FCX6RJ	55.5	56.7	55.7	55.0	55.7	-1.72	2.3	0.7	57.4	-0.97	2.2	1.8	16	LD
FQD3WK	59.9	61.5	63.7	62.6	61.9	1.33	2.4	1.6	61.3	1.18	2.3	1.6	8	LC
FRPY3N	62.1	63.2	65.3	* 60.4	62.7	1.73	2.0	2.1	62.2	1.63	2.0	1.5	15	LE
GCRALH	53.5	* 54.6	58.4	53.3	X 55.0	-2.11	* 3.4	2.3	55.4	-2.03	* 3.9	2.3	15	LC
GHX4FE	58.5	59.1	59.3	59.3	59.0	-0.10	1.7	0.4	59.4	0.13	2.0	0.5	16	LD
GR962E	58.5	L 58.2	L 57.8	L 59.4	58.5	-0.37	1.2	0.7	58.8	-0.22	1.4	0.9	8	LZ
H2PALJ	55.7	55.5	58.7	58.2	57.0	-1.09	2.6	1.6	57.9	-0.69	2.5	1.3	16	LD
H6MXYK	58.0	56.4	59.9	L 57.9	L 58.0	-0.58	1.9	1.4	58.6	-0.34	1.8	1.2	16	LC
HAGUMB	57.9	56.5	55.7	58.0	H 57.0	-1.09	3.8	1.1	65.6	3.50	X 3.3	5.2	H 16	XX
HWWCTL	62.4	61.0	60.0	60.2	H 60.9	0.82	3.9	1.1	59.8	0.35	3.7	2.3	16	XX
JA2M4E	59.0	57.5	57.3	56.2	57.5	-0.85	2.3	1.2	57.1	-1.10	1.9	1.1	16	LD
JECZLD	60.5	58.3	58.2	58.9	59.0	-0.12	3.3	1.1	59.4	0.15	3.3	1.1	16	LD
JTUTAK	57.9	59.2	58.9	58.5	58.6	-0.29	2.0	0.6	59.1	-0.01	2.1	1.0	16	LD
K78NYF	59.2	57.0	55.8	61.5	58.4	-0.42	2.4	2.5	58.9	-0.13	2.4	1.4	14	LZ
KLNJEC	55.9	55.9	57.7	57.8	L 56.8	-1.19	2.2	1.1	58.1	-0.58	2.3	1.8	16	TH
MNN8BD	59.3	60.3	58.0	57.9	58.9	-0.17	2.6	1.2	56.8	-1.27	2.4	1.6	16	EM
NFRQYD	59.2	60.0	58.7	59.5	59.4	0.06	2.7	0.5	59.5	0.15	2.6	0.7	16	LC



Containerboard Interlaboratory Testing Program  
Analysis 240

Report #562 (H)  
July 2016

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

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
P2K689	59.1	58.4	55.8	58.5	58.0	-0.63	2.5	1.5	58.4	-0.41	2.5	1.3	14	LD
QM22Z4	59.8	63.4	60.8	60.4	61.1	0.92	2.2	1.6	60.6	0.80	2.0	1.6	16	MB
QPR2H9	55.9	57.6	57.1	55.3	56.5	-1.36	2.7	1.1	56.8	-1.30	2.9	1.3	16	LD
VDVN76	61.1	60.7	59.5	61.0	60.6	0.67	2.8	0.7	60.3	0.60	2.6	1.0	14	LX
VVXNX6	57.0	57.4	60.8	60.6	59.0	-0.13	3.5	2.0	58.5	-0.39	3.1	1.6	12	LC
W46PR4	62.0	61.2	59.1	61.8	61.0	0.88	2.1	1.3	60.8	0.87	2.9	1.1	16	LC
WAVY23	58.1	56.6	57.6	60.9	58.3	-0.47	2.8	1.9	57.8	-0.77	3.0	2.0	16	MB
WFWBXY	61.8 H	57.8 H	59.4 H	60.6 H	59.9	0.32	5.6	1.7	59.9	0.41	4.4	1.4	16	TG
WPMW4X	59.3	58.6	60.1	59.9	59.5	0.12	2.6	0.7	59.3	0.05	2.3	0.8	16	LD
YFAK46	57.4	56.8	57.5	56.3	57.0	-1.10	2.8	0.5	56.2	-1.63	2.4	1.0	16	LD
Z94A8W	63.0	62.8	64.8 *	64.7 *	63.8	2.27 *	2.8	1.1	62.6	1.87	2.4	1.4	12	TM

Consensus (All Labs) Results														
Wk Mean	59.19	59.02	59.15	59.29	Month Mean	59.23			Grand Mean	59.17				
Avg SDr	2.76	2.67	2.64	2.77	Avg SDr	2.67			Avg SDr	2.62				
SD btwn Labs	2.41	2.34	2.42	2.22	SD btwn Labs	2.03			SD btwn Labs	1.84				
Labs Includ	45	43	43	44	SD btwn Wks	1.26			SD btwn Wks	2.17				
Labs Exclcd	1	1	2	2	Labs Includ	44			Labs Includ	44				
Labs not Rcvd	0	2	1	1										

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program  
Analysis 250

Report #562 (H)  
July 2016

Fluted Edge Crush Strength (FCF), 26 lb Corrugating Medium - CM81  
TAPPI Official Method T824

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2GC2BZ	68.0	69.1	68.6	69.3	68.8	-0.16	2.2	0.6	68.4	0.01	1.6	0.8	16	XX
4AAUNW	67.6	69.2	68.0	68.8	68.4	-0.28	2.5	0.7	68.4	0.01	3.3	3.0	16	LZ
4JYE UU	70.8	72.3	70.6	68.7	70.6	0.52	2.1	1.5	68.3	-0.02	2.4	3.2	16	XX
7Q63GR	69.6	71.2	68.8	71.3	70.2	0.39	1.7	1.2	71.1	0.84	2.2	1.3	16	LC
84CBZU	68.0 <b>H</b>	67.2	66.9	66.6	67.2	-0.74	2.8	0.6	66.3	-0.65	3.5	1.1	8	XX
A4ZJYN	69.6	68.9	70.9	68.8	69.6	0.14	2.1	1.0	69.7	0.41	2.3	1.0	16	LD
C323VQ	56.0 <b>X</b>	56.8 <b>X</b>	59.1 <b>*H</b>	56.2 <b>X</b>	57.0	-4.47 <b>X</b>	2.7	1.4	56.7	-3.61 <b>X</b>	3.4	1.4	12	MB
C727QJ	70.2	70.5	70.0	69.1	69.9	0.28	2.1	0.6	69.8	0.43	2.1	1.1	16	XX
CDHMEM	72.5 <b>L</b>	71.2	74.4 <b>L</b>	72.8 <b>L</b>	72.7	1.30	0.9	1.3	71.6	0.99	1.0	1.6	16	TD
FCX6RJ	73.2	72.0	72.7	74.3	73.1	1.42	2.0	1.0	71.0	0.80	2.0	1.8	16	LD
FRPY3N	63.4	66.7	68.6	64.8	65.9	-1.21	2.0	2.3 <b>H</b>	65.3	-0.96	2.1	2.1	15	LE
GHX4FE	68.4	68.7	69.0	68.3	68.6	-0.22	1.9	0.3	69.3	0.28	2.0	0.5	16	LD
JECZLD	75.7 <b>*</b>	73.5	74.7	74.6	74.6	1.99	1.9	0.9	75.7	2.26 <b>*</b>	2.0	1.1	12	XX
JTUTAK	66.5	65.1	63.5	63.4	64.6	-1.67	1.8	1.5	64.1	-1.33	1.8	1.1	16	LD
NFRQYD	67.5	68.2	67.3	66.8	67.5	-0.63	2.8	0.6	66.6	-0.57	3.9	1.2	8	XX
VDVN76	69.2	69.1	70.8	68.4	69.4	0.07	2.0	1.0	62.5	-1.81	4.4	6.1 <b>H</b>	14	LD
WPMW4X	66.5	66.1	64.7	66.3	65.9	-1.20	1.6	0.8	66.3	-0.66	1.9	0.6	16	LD

Consensus (All Labs) Results														
Wk Mean	69.17	69.31	68.74	68.89	Month Mean	69.18			Grand Mean	68.40				
Avg SDr	2.20	2.00	2.22	2.05	Avg SDr	2.08			Avg SDr	2.57				
SD btwn Labs	2.94	2.35	3.88	3.14	SD btwn Labs	2.73			SD btwn Labs	3.23				
Labs Incl	16	16	17	16	SD btwn Wks	1.09			SD btwn Wks	2.19				
Labs Excl	1	1	0	1	Labs Incl	16			Labs Incl	16				
Labs not Rcvd	0	0	0	0										

Key to Instrument Codes Reported by Participants

LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LE	L&W CRUSH TESTER 275	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TD	TMI Digital Crush Tester, Model 17-09
XX	Instrument make/model not specified by lab		





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

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2Z8UWX	40.9	41.8	39.6	39.8	40.5	0.64	1.7	1.0	41.3	0.93	1.6	0.9	16	LC
32JTTR	40.9	No DATA	39.1	40.5	40.2	0.48	2.3	0.9	41.1	0.83	2.2	1.3	15	XX
47T7BQ	42.6	43.5	42.9	42.1	42.8	1.71	2.3	0.6	41.8	1.15	2.4	1.1	16	WK
4JYE UU	37.5	39.3	37.7	36.8	37.8	-0.62	2.1	1.1	36.8	-1.11	2.2	2.5	16	LC
7Q63GR	38.9	39.1	37.4	39.8	38.8	-0.16	1.9	1.0	39.4	0.07	1.8	1.1	16	LC
9FYXJV	43.3	43.0	41.9	41.0	42.3	1.48	2.3	1.1	43.2	1.80	2.3	0.8	16	LZ
A4ZJYN	40.5	40.7	40.1	39.8	40.3	0.53	1.7	0.4	40.5	0.58	1.6	0.6	16	LD
C323VQ	28.0 X	29.9 *	28.8 X	27.7 X	28.6	-4.97 X	2.3	1.0	30.5	-3.98 X	2.3	1.9	12	MB
C727QJ	36.8	36.8	37.2	36.3	36.8	-1.12	2.4	0.4	37.1	-0.97	2.2	0.7	16	LD
DNYTQG	40.3	40.3	39.6	38.8	39.7	0.27	1.9	0.7	39.3	0.02	2.0	1.2	16	EM
DYWU4L	40.6 H	40.2	39.8	40.6	40.3	0.54	2.7	0.4	39.1	-0.07	2.3	2.0	16	TH
FCX6RJ	39.3	39.6	39.1	39.0	39.2	0.03	2.1	0.3	38.8	-0.20	1.9	1.4	16	LD
FQD3WK	40.0	38.6	38.1	39.4	39.0	-0.07	1.7	0.8	39.5	0.14	1.8	0.9	8	LD
H6MXYK	32.7 *	34.8	35.5 L	36.5	34.9	-2.01 *	1.3	1.6	35.0	-1.95	1.2	1.4	16	LC
MNN8BD	40.9	41.0	40.4	40.0	40.6	0.66	1.6	0.4	41.1	0.85	2.0	0.8	16	LC
P2K689	39.2	33.0	37.9	38.4	37.1	-0.96	2.5	2.8 H	38.8	-0.18	2.1	2.6 H	14	LD
PTUJ2A	34.6	35.4	36.8 L	36.7 L	35.9	-1.54	0.9	1.1	35.4	-1.76	1.0	0.6	16	WK
W46PR4	30.0 X	29.2 *	29.2 X	29.8 X	29.5	-4.51 X	1.1	0.4	27.4	-5.40 X	1.9	1.8	16	XX
WPMW4X	40.1	39.4	41.5	40.2	40.3	0.53	2.2	0.9	40.8	0.70	1.9	0.9	16	LD
Z94A8W	40.5	40.9	40.9	41.0	40.8	0.76	1.8	0.2	39.7	0.21	2.3	3.5 H	12	LD
ZQ8M4T	37.1	35.6	37.1	36.9	36.7	-1.15	2.0	0.7	36.9	-1.06	2.5	2.1	16	LZ

Consensus (All Labs) Results										
Wk Mean	39.29	38.11	39.08	39.13	Month Mean	39.15	Grand Mean	39.23		
Avg SDr	2.09	1.96	2.03	1.96	Avg SDr	2.02	Avg SDr	2.00		
SD btwn Labs	2.59	3.99	1.94	1.75	SD btwn Labs	2.13	SD btwn Labs	2.20		
Labs Incl	19	20	19	19	SD btwn Wks	1.03	SD btwn Wks	1.58		
Labs Excl	2	0	2	2	Labs Incl	19	Labs Incl	19		
Labs not Rcvd	0	1	0	0						

**Key to Instrument Codes Reported by Participants**

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



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

**Report #562 (H)**  
**July 2016**

WebCode	Weekly Means				Monthly Results				Cumulative Results				Inst	
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks		Wks
2Z8UWX	12.9	13.3	12.9	12.2	12.8	-0.32	0.6	0.5	13.1	-0.02	0.6	0.5	16	XX
32JTTR	12.4 L	13.3 L	13.4 L	13.5 L	13.2	0.27	0.0	0.5	13.4	0.72	0.0	0.6	16	XX
47T7BQ	14.4 *	14.3 *	14.3 *L	14.4 *L	14.4	2.30 *	0.5	0.1	14.1	2.08 *	0.5	0.2	16	LZ
7Q63GR	12.8	12.8	13.0	13.2	13.0	-0.08	0.6	0.2	12.6	-0.94	0.7	0.3	16	LU
84CBZU	12.9	12.9	13.1	13.1	13.0	-0.01	0.6	0.1	13.0	-0.23	0.7	0.1 L	16	LB
DM4BPF	13.7	13.8	13.6	13.3	13.6	0.99	1.0	0.2	13.5	0.78	0.9	0.2	8	TT
DNYTQG	12.4	11.9	12.8	11.9	12.3	-1.27	0.7	0.4	13.0	-0.23	0.7	0.6	16	LZ
FCX6RJ	13.2	12.8	12.7	12.5	12.8	-0.37	0.9	0.3	12.9	-0.38	0.9	0.4	16	LA
FQD3WK	13.6	13.8	14.0	13.9	13.8	1.37	0.7	0.2	14.1	2.05 *	0.7	0.4	8	LB
GCRALH	13.2	13.5	13.5	13.1	13.4	0.59	1.2	0.2	13.6	1.10	0.9	0.5	15	LW
GHX4FE	12.9	13.1	12.8	13.1	13.0	-0.02	0.6	0.1	13.0	-0.13	0.7	0.2	16	LA
GR962E	12.8	12.6	12.6	13.0	12.7	-0.43	0.9	0.2	12.8	-0.61	0.8	0.2	8	LU
H2PALJ	12.3	12.6	12.7	12.2	12.4	-0.96	0.9	0.2	12.6	-1.03	0.8	0.3	16	LU
K78NYF	12.5	12.4	12.4	12.6	12.5	-0.91	0.8	0.1	12.3	-1.59	0.8	0.2	16	LB
KLNJEC	13.4	12.8	13.2	12.9	13.0	0.07	0.7	0.3	13.5	0.92	0.6	2.2 H	16	TT
MNN8BD	13.2	12.7	13.2	11.5 *	12.6	-0.60	0.8	0.8 H	12.8	-0.58	0.8	0.4	16	LB
NFRQYD	13.1	13.0	12.9	13.0	13.0	0.00	0.7	0.1	13.0	-0.25	0.7	0.1 L	16	LB
P2K689	12.4	12.5	11.8	12.3	12.2	-1.27	0.7	0.3	12.9	-0.31	0.8	0.8	14	LZ
VDVN76	13.0	13.1	12.7 L	13.1	13.0	-0.06	0.7	0.2	12.6	-0.92	0.7	0.4	14	LB
WAVY23	12.0 L	11.4 *L	12.0 L	12.6 L	12.0	-1.71	0.0	0.5	12.3	-1.57	0.0	0.6	15	LA
WPMW4X	13.0	13.2	13.4	12.9	13.1	0.22	1.0	0.2	13.1	0.01	0.8	0.3	16	LA
Z33T2X	13.5	13.0	11.8	12.6	12.7	-0.49	0.9	0.8 H	12.9	-0.39	0.8	0.6	16	LA
Z94A8W	14.3	14.0	15.0 X	14.2	14.4	2.29 *	1.0	0.5	13.8	1.48	0.8	0.6	12	LA
ZQ8M4T	13.6	13.1	13.3	13.0	13.2	0.40	0.9	0.3	13.1	0.07	0.9	0.7	16	LA

Consensus (All Labs) Results												
Wk Mean	13.06	13.00	12.95	12.91	Month Mean	13.00		Grand Mean	13.08			
Avg SDr	0.77	0.79	0.75	0.79	Avg SDr	0.77		Avg SDr	0.73			
SD btwn Labs	0.59	0.64	0.64	0.68	SD btwn Labs	0.59		SD btwn Labs	0.50			
Labs Incl	24	24	23	24	SD btwn Wks	0.36		SD btwn Wks	0.62			
Labs Excl	0	0	1	0	Labs Incl	24		Labs Incl	24			
Labs not Rcvd	0	0	0	0								



Containerboard Interlaboratory Testing Program  
Analysis 261  
**STFI, 26 lb Corrugating Medium - CM81**

**Report #562 (H)**  
**July 2016**

**Key to Instrument Codes Reported by Participants**

<b>LA</b>	L&W Autoline	<b>LB</b>	L&W Model 152
<b>LU</b>	L&W 52 without moisture correction (was 53)	<b>LW</b>	L&W 53 with moisture correction (was 53M)
<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		