



Containerboard Interlaboratory Testing Program

Participant Summary Report #641 - February 2023

[Introduction to the Containerboard Program](#)

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

Analysis	Sample	Analysis Name
<u>201</u>	<u>BX17</u>	<u>Top to Bottom Box Compression Strength, Corrugated Boxes</u>
<u>202</u>	<u>EC15</u>	<u>Edgewise Compressive Strength, by T811, Corrugated Board</u>
<u>203</u>	<u>EC15</u>	<u>Edgewise Compressive Strength by T839, Corrugated Board</u>
<u>205</u>	<u>42H2</u>	<u>Bursting Strength (Mullen), 42 lb Linerboard</u>
<u>207</u>	<u>35E3</u>	<u>Bursting Strength (Mullen), 35 lb Linerboard</u>
<u>215</u>	<u>42H2</u>	<u>Ring Crush, 42 lb Linerboard</u>
<u>217</u>	<u>35E3</u>	<u>Ring Crush, 35 lb Linerboard</u>
<u>223</u>	<u>42H2</u>	<u>STFI, 42 lb Linerboard</u>
<u>225</u>	<u>35E3</u>	<u>STFI, 35 lb Linerboard</u>
<u>228</u>	<u>42H2</u>	<u>Roughness - Stylus Method, 42 lb Linerboard</u>
<u>229</u>	<u>42H2</u>	<u>Roughness - Sheffield Method, 42 lb Linerboard</u>
<u>231</u>	<u>42H</u>	<u>Internal Bond, 42 lb Linerboard</u>
<u>234</u>	<u>42H</u>	<u>COF Inclined Plane (Slide Angle), 42 lb Linerboard</u>
<u>237</u>	<u>42H2</u>	<u>Air Resistance, 42 lb Linerboard</u>
<u>240</u>	<u>CM12</u>	<u>Flat Crush Strength (CMT), 26 lb Corrugating Medium</u>
<u>250</u>	<u>CM12</u>	<u>Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium</u>
<u>255</u>	<u>CM12</u>	<u>Ring Crush (RCT), 26 lb Corrugating Medium</u>
<u>261</u>	<u>CM12</u>	<u>STFI, 26 lb Corrugating Medium</u>

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

The Interlaboratory Testing Program for Containerboard is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance provided by the Containerboard Group of the American Forest & Paper Association. The tests are conducted on a monthly basis.

For these tests samples of linerboard and corrugating medium, that each have been separately randomized from narrow rolls, are distributed for testing weekly. One weight of medium (26 lb.) is used for Concora Flat Crush Strength, Corrugated Fluted Crush Strength, Ring Crush Strength, and STFI Compression. Two weights of linerboard are tested each month for Mullen Burst, Ring Crush, and STFI Compression: 42 lb. - every month; 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.

Material	Lot Code	Dates in Use
26# Corrugating Medium	CM12	July 2021 - Current
	CM11	April 2019 - June 2021
35# Corrugating Medium	35E3	June 2022 - Current
	35E2	June 2020 - April 2022
42# Corrugating Medium	42H2	December 2022 - Current
	42H1	April 2022 - November 2022
56# Corrugating Medium	56G3	July 2022 - Current
	56G2	May 2021 - May 2022

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, agriculture, hemp, 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 100 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
Top to Bottom Box Compression Strength, Corrugated Boxes - BX17
 TAPPI Official Test Method T804

Report #641
February 2023

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
23UJ67	884.0	0.57	113.70	875.1	0.69	12.59	2	ER
2U34HN	836.3	-0.12	65.61	823.6	-0.20	17.85	2	LM
3QXJ6M	824.4	-0.29	42.56	820.5	-0.26	5.52	2	XX
6BC4YU	922.7	1.13	125.51	868.6	0.58	76.55	2	ET
6WV9KH	744.2	-1.44	84.60	730.1	-1.84	19.98	2	LS
77WV99	808.2	-0.52	83.23	802.6	-0.57	7.91	2	EX
8RUQDG	762.8	-1.17	123.15	815.3	-0.35	74.36	2	LL
8TAYQB	746.3	-1.41	30.50	708.3	-2.22 *	53.81	2	LL
9JXDT8	921.0	1.10	62.44	903.3	1.19	25.01	2	LG
9YQT6K	865.0	0.30	80.94	809.7	-0.45	78.21	2	ER
9ZLGLU	893.6	0.71	87.72	897.7	1.09	5.71	2	LO
DBRXCA	796.2	-0.69	51.04	828.2	-0.13	45.24	2	TB
DFJ8H3	855.8	0.16	68.34	872.9	0.66	24.18	2	EX
F8HMGH	788.4	-0.81	114.29	794.3	-0.72	8.34	2	EX
F8UL7Z	800.3	-0.63	25.64	800.3	-0.61	0.00	1	EX
G2NAQE	731.2	-1.63	40.58	805.3	-0.52	104.85	2	LS
JH8KT8	912.8	0.98	37.76	930.5	1.66	25.07	2	ER
K2Y8EM	841.1	-0.05	95.66	831.9	-0.06	13.01	2	ER
KRT4RX	974.7	1.88	18.70	893.9	1.02	114.35	2	LN
M32UZQ	905.2	0.88	104.94	903.7	1.19	2.12	2	EX
QHP2R9	730.1	-1.64	107.55	739.0	-1.68	12.57	2	ER
U88V2L	781.3	-0.91	80.54	775.9	-1.04	7.68	2	EX
VAWHDA	907.6	0.91	65.49	894.0	1.02	19.35	2	LM
Y22VMK	865.0	0.30	47.27	889.2	0.94	34.18	2	LS
YHFXU9	926.0	1.18	77.23	896.0	1.06	42.43	2	ES
ZCPXXT	852.6	0.12	67.94	812.6	-0.40	56.57	2	LG
ZEWD7J	949.4	1.51	17.55 L	862.8	0.48	122.49	2	LG
ZHA3LM	816.0	-0.41	10.04 L	805.0	-0.53	15.50	2	LL

Consensus (All Labs) Results			
Month Mean	844.37	Grand Mean	835.37
Avg SD	76.36	Avg SD Months	51.50
SD btwn Labs	69.46	SD btwn Labs	57.21
Labs Incl	28	Labs Incl	28



Containerboard Interlaboratory Testing Program
Analysis 201

Report #641
February 2023

Top to Bottom Box Compression Strength, Corrugated Boxes - BX17

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	845.25	65.16	0.88	10
Clip sealing	839.82	73.75	4.54	17
Staple sealing	912.76	0.00	68.39	1

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	LL	Lansmont 76-5K
LM	Lansmont 122-15k	LN	Lansmont 152-50k
LO	Lansmont 152-30k	LS	Lansmont Squeezer
TB	TMI Monitor/Compression Tester, Model 17-70	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 202
Edgewise Compressive Strength, by T811, Corrugated Board - EC15
 TAPPI Official Test Method T811

Report #641
February 2023

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
3QXJ6M	44.8	0.54	2.45	44.8	0.69	0.07	2	TS
AHYKEZ	43.7	0.23	1.20	41.2	-0.46	3.51	2	TD
DFJ8H3	44.4	0.43	2.13	44.0	0.46	0.52	2	LC
E77RVQ	49.7	1.83 *	1.26	49.7	2.29 *	0.00	1	EM
G2NAQE	37.2	-1.47	1.46	41.3	-0.42	5.87	2	LD
GQRYPY	160.5	30.94 X	5.05 H	158.3	37.24 X	3.09	2	LD
JPJ3MQ	36.6	-1.62	1.63	38.2	-1.41	2.30	2	XX
K2Y8EM	44.0	0.33	2.95 H	42.6	0.01	1.94	2	EN
PUJXG2	43.1	0.09	1.02	41.3	-0.43	2.55	2	XX
RUB3ET	38.9	-1.01	1.16	38.9	-1.18	0.00	1	TS
U88V2L	43.9	0.31	2.31	43.3	0.23	0.87	2	LC
ZEWD7J	44.0	0.34	1.70	43.3	0.22	1.05	2	LE

Consensus (All Labs) Results			
Month Mean	42.76	Grand Mean	42.61
Avg SD	1.85	Avg SD Months	2.67
SD btwn Labs	3.80	SD btwn Labs	3.11
Labs Incd	11	Labs Incd	11

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LE	L&W Crush Tester 840	TD	TMI Digital Crush Tester, Model 17-09
TS	TMI Digital Crush Tester, Model 17-56	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC15
 TAPPI Official Test Method T839

Report #641
February 2023

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
23UJ67	46.7	-0.12	1.49	46.2	-0.13	0.68	2	LD
2U34HN	45.6	-0.36	1.38	44.1	-0.66	2.15	2	TG
3BYT66	37.4	-2.38 *	2.82 H	36.5	-2.58 *	1.14	2	XX
3QXJ6M	52.9	1.41	1.03	52.7	1.52	0.34	2	TS
6BC4YU	49.5	0.58	1.24	48.7	0.52	1.12	2	TD
6WBC9H	49.2	0.50	2.07	49.1	0.61	0.11	2	TH
6WV9KH	43.1	-0.99	1.38	42.8	-0.98	0.33	2	EM
8TAYQB	50.0	0.69	2.04	49.7	0.77	0.37	2	LC
9396VA	47.7	0.13	1.60	48.1	0.37	0.68	2	TU
9JXDT8	54.8	1.87	1.12	51.6	1.24	4.53	2	MK
9YQT6K	45.0	-0.52	1.12	44.7	-0.50	0.37	2	EM
9ZLGLU	42.5	-1.12	1.01	42.0	-1.19	0.72	2	LD
DBRXCA	56.7	2.34 *	0.97	56.0	2.36 *	1.07	2	LD
DCZAUC	55.6	2.05 *	1.60	55.0	2.11 *	0.78	2	LC
DFJ8H3	50.6	0.86	1.71	49.0	0.57	2.39	2	LC
F8HMGH	45.1	-0.49	1.75	43.5	-0.80	2.26	2	LD
F8UL7Z	43.3	-0.93	1.75	43.3	-0.86	0.00	1	TL
G2NAQE	44.2	-0.72	0.90	45.3	-0.36	1.56	2	LD
JH8KT8	48.0	0.21	3.86 H	47.7	0.26	0.37	2	LD
K2Y8EM	47.2	0.01	1.79	46.7	0.00	0.65	2	EN
KDAP46	45.7	-0.35	2.64	45.5	-0.32	0.31	2	EM
M32UZQ	46.0	-0.28	1.58	45.3	-0.36	0.99	2	CT
PUJXG2	43.8	-0.80	1.55	41.7	-1.26	2.93	2	XX
QHP2R9	42.5	-1.12	1.66	42.7	-1.03	0.20	2	LD
RUB3ET	48.9	0.44	1.84	48.9	0.57	0.00	1	TS
U88V2L	49.9	0.66	1.04	48.7	0.50	1.66	2	LC
V2HKKV	43.0	-1.01	1.11	44.1	-0.65	1.63	2	BU
V9HXMK	45.8	-0.31	1.90	46.3	-0.10	0.67	2	LD
VAWHDA	46.1	-0.26	2.77	47.2	0.14	1.65	2	EM
WB38CC	50.1	0.71	0.69 L	50.4	0.94	0.48	2	TG
YHFXU9	48.3	0.28	1.52	46.4	-0.08	2.67	2	LD
ZEWD7J	44.6	-0.61	1.01	44.4	-0.59	0.35	2	LY
ZHA3LM	45.6	-0.38	1.09	46.5	-0.05	1.28	2	BU



Containerboard Interlaboratory Testing Program
Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC15
TAPPI Official Test Method T839

Report #641
February 2023

Consensus (All Labs) Results			
Month Mean	47.12	Grand Mean	46.69
Avg SD	1.73	Avg SD Months	1.53
SD btwn Labs	4.11	SD btwn Labs	3.94
Labs Incl	33	Labs Incl	33

Key to Instrument Codes Reported by Participants

BU Buchel Digital Crush Tester	CT Con-Ten
EM Emerson 1200 Series	EN Emerson 2200
LC L&W Crush Tester 48	LD L&W Crush Tester 248
LY L&W 830	MK Mark-10 ESM303
TD TMI Digital Crush Tester, Model 17-09	TG TMI Digital Crush Tester, 17-76
TH TMI Monitor/Compression Tester, Model 17-76	TL Tech-Lab Systems Compression
TS TMI Digital Crush Tester, Model 17-56	TU TMI Universal Crush Tester (TMI K440)
XX Instrument make/model not specified by lab	



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42H2
 TAPPI Official Test Method T807

Report #641
February 2023

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	
23UJ67	121.5	121.6	114.8	119.9	119.5	0.74	7.3	3.2	117.6	0.39	8.2	2.4	12	AH
2P6GQK_AL	116.3	117.4	120.0	118.6	118.1	0.44	7.0	1.6	117.8	0.42	7.7	1.4	12	AL
3LMLJL	116.6	115.9	113.7	115.5	115.4	-0.14	5.9	1.2	115.8	-0.06	6.5	0.9	L 12	TP
3Y6JFA	112.5	109.2	108.7	111.1	110.4	-1.24	8.5	1.8	111.2	-1.15	9.3	3.4	12	LC
4QTPYM_AL	113.8	110.7	112.3	119.7	114.2	-0.42	6.8	3.9	114.4	-0.38	6.3	3.0	8	AL
68EHBX_AL	120.8	125.6	120.2	124.0	122.7	1.44	9.5	2.6	121.5	1.30	7.9	2.4	12	AL
6PVNG2_AL	120.8	115.0	118.7	121.6	119.0	0.65	8.9	2.9	118.8	0.66	8.8	3.0	12	AL
6TUZHT	125.1	122.7	122.2	114.9	H 121.2	1.12	12.2	4.4	119.1	0.74	10.4	5.0	12	LC
7ZCQF9	No DATA	123.4	No DATA	118.4	120.9	1.06	8.1	3.5	121.1	1.22	6.8	1.8	7	AH
8B3247_AL	102.6 *	121.6	H 105.3 *	107.4	109.2	-1.50	12.9	8.5	H 109.2	-1.62	12.9	8.5	H 4	AL
A4BM7A	106.7	118.4	113.0	110.0	112.0	-0.88	10.0	4.9	112.3	-0.89	9.3	4.0	12	XX
BW9X3B	108.3	112.5	108.5	110.9	110.0	-1.32	6.2	2.0	111.1	-1.18	5.7	2.0	11	XX
C4B3Y2_AL	114.7	119.1	117.4	116.2	116.9	0.17	9.5	1.9	115.9	-0.03	9.9	2.2	10	AL
C4T7CT	118.3	110.6	108.6	113.0	112.6	-0.75	10.8	4.2	109.7	-1.51	9.2	6.3	12	LC
D24YNQ	112.4	113.2	106.8	111.2	110.9	-1.13	8.7	2.9	113.6	-0.57	9.0	3.7	12	LA
D3BEWG	119.0	123.3	123.3	123.7	122.3	1.37	6.8	2.2	123.6	1.80	7.3	3.3	12	AX
DBRXCA	111.4	106.9	108.5	115.6	110.6	-1.19	8.6	3.8	110.2	-1.38	8.6	2.7	8	XX
DML826_AL	120.8	112.4	116.6	119.6	117.4	0.28	7.2	3.7	117.4	0.32	8.8	3.4	12	AL
DUH4P8_AL	112.6	117.7	111.3	120.1	115.4	-0.14	8.4	4.2	114.9	-0.27	9.2	3.0	12	AL
F8HMGH	123.6	117.2	112.8	116.8	117.6	0.33	9.5	4.5	119.2	0.75	8.7	4.0	12	AH
FXUQDW	111.7	110.0	116.0	113.6	112.8	-0.71	8.0	2.6	111.9	-0.98	9.5	2.7	12	LC
G2NAQE	112.4	113.1	113.9	113.3	113.2	-0.63	10.1	0.6	115.5	-0.13	9.6	3.4	12	LA
GHEAKY	111.8	110.4	113.8	114.6	112.7	-0.75	7.4	1.9	114.1	-0.45	8.4	3.2	12	AH
GHEAKY_AL	127.8 *	124.6	127.1 *	121.6	125.3	2.01 *	10.2	2.8	124.0	1.90	10.4	2.4	12	AL
GQRYPY	112.3	106.3	105.6	105.7 *	107.5	-1.88	7.9	3.2	105.2	-2.57 *	8.4	3.6	12	LA
HMQBKW	112.4	115.5	112.4	115.9	114.0	-0.44	9.4	1.9	115.5	-0.12	9.1	2.8	12	TP
HMQBKW_A	113.1	108.6	111.3	111.2	111.0	-1.10	7.2	1.8	111.3	-1.13	6.0	2.3	12	XX
HPQN3V_AL	115.3	121.1	115.8	114.7	116.7	0.14	10.0	2.9	116.5	0.11	9.9	2.9	12	AL
KP4W82_AL	106.6	120.2	119.4	116.7	115.7	-0.08	9.3	6.3	115.8	-0.05	9.8	4.2	12	AL
KYRURE	112.8	113.7	114.2	118.3	114.8	-0.29	10.2	2.4	116.5	0.12	10.0	2.9	12	LC
LCV4V4	115.9	116.4	114.4	118.7	116.4	0.06	7.5	1.8	115.9	-0.02	7.1	1.4	12	AH
LKNNHF	121.4	116.8	119.5	109.4	116.8	0.16	11.3	5.3	116.6	0.13	11.2	3.7	12	LZ
M32UZQ	116.5	120.0	H 119.0	112.0	116.9	0.18	11.4	3.6	118.1	0.50	10.2	2.9	12	XX
MXP2TX_AL	117.7	115.9	115.1	115.3	116.0	-0.01	9.9	1.2	112.7	-0.79	9.4	7.6	H 12	AL
MZF2C3	121.9	126.0	122.5	122.9	123.3	1.58	9.7	1.8	119.3	0.78	10.8	6.8	12	LB



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42H2
 TAPPI Official Test Method T807

Report #641
February 2023

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	
N97VXY	119.7	112.0	115.5	122.7	117.5	0.30	10.8	4.7	119.1	0.73	9.4	4.8	12	LC
N97VXY_AL	119.4	116.5	119.6 H	122.7	119.5	0.76	11.0	2.5	120.3	1.03	9.4	2.2	12	AL
N9NUZ4	124.9	122.8	126.2 *	123.3	124.3	1.80	9.2	1.5	120.6	1.08	10.0	3.7	12	LJ
NYY4J3	122.1	120.6 L	116.6	120.9	120.1	0.87	5.8	2.4	119.3	0.77	6.3	1.8	12	LA
PUJXG2	119.5	111.1	117.7	113.1	115.3	-0.16	6.1	3.9	114.6	-0.33	6.0	2.5	12	LC
QCYRHA	122.5	122.7	117.1	119.5	120.4	0.95	10.0	2.7	119.6	0.86	9.7	2.6	12	LA
QCYRHA_AL	110.4	112.9	115.9	111.5	112.7	-0.74	7.9	2.4	115.9	-0.03	7.3	3.0	12	AL
QHP2R9	109.1	107.0	111.3	116.2	110.9	-1.13	9.7	3.9	110.3	-1.36	9.5	4.0	12	LZ
QVTMUX	No DATA	118.0	117.8	117.4	117.7	0.36	6.0	0.3 L	118.1	0.50	5.4	1.7	8	AX
QVTMUX_AI	No DATA	115.2	118.5	115.4	116.4	0.07	8.0	1.9	115.8	-0.05	6.9	1.8	8	AL
RJ9K4P_AL	118.8	120.5	122.3	117.0	119.6	0.78	9.6	2.3	118.4	0.58	9.7	2.9	12	AL
RP63PW	107.2	110.8	102.0 *	107.2	106.8	-2.02 *	9.3	3.6	107.3	-2.07 *	9.6	4.0	12	RE
T3MCN8	119.7	115.7	119.5	118.3	118.3	0.49	9.0	1.8	119.4	0.81	9.7	1.8	12	LA
U88V2L	105.1	100.2 X	110.3	104.2 *	105.0	-2.43 *	8.7	4.2	111.1	-1.16	8.6	8.3 H	12	AH
UCM4Q7	116.8 L	116.5	117.0 L	116.5 L	116.7	0.14	3.4	0.2 L	116.9	0.20	5.2	0.4 L	12	LA
UF6LLW	126.7	127.3 *	126.7 *	126.2 *	126.7	2.33 *	4.4	0.5 L	125.9	2.36 *	3.9	0.7 L	12	AH
V9HXMK_AL	125.5	119.5	115.5	118.7	119.8	0.81	6.8	4.2	120.2	1.00	7.3	2.5	12	AK
VQEH46_AL	116.5	108.4	115.1	118.3	114.6	-0.33	6.6	4.3	110.9	-1.22	7.4	5.7	12	AL
WQVWBE	110.2	111.1	119.7	113.0	113.5	-0.56	10.0	4.3	113.8	-0.53	8.9	3.1	12	LA
X3NTUR	112.1	113.0	109.7	114.8	112.4	-0.80	8.1	2.1	112.7	-0.79	7.6	4.1	12	ME
Y6RVCG	122.3	117.8	112.3	122.6	118.8	0.59	6.2	4.8	119.1	0.72	7.9	3.8	12	TB
YC8QUW	116.3 L	117.2 L	117.0 L	115.9 L	116.6	0.12	3.0	0.6	116.7	0.15	4.7	2.3	12	LA
YHFXU9	111.4	113.1	115.4	115.1	113.8	-0.51	9.5	1.9	114.4	-0.38	9.2	3.1	12	LA
ZEQ6XW	114.2	114.2	116.3	113.6	114.6	-0.33	5.8	1.2	114.4	-0.40	6.0	0.8 L	12	LJ
ZEWD7J	119.4	123.7	123.7	124.7	122.9	1.49	8.9	2.4	123.0	1.65	7.9	2.4	12	AH

Consensus (All Labs) Results														
Wk Mean	116.09	116.28	115.62	116.35	Month Mean	116.07			Grand Mean	116.02				
Avg SDr	7.97	9.14	8.55	9.02	Avg SD	8.66			Avg SD	8.58				
SD btwn Labs	5.76	5.27	5.32	4.87	SD btwn Labs	4.58			SD btwn Labs	4.20				
Labs Incl	57	59	59	60	SD btwn Wks	3.25			SD btwn Wks	3.63				
Labs Excl	0	1	0	0	Labs Incl	60			Labs Incl	60				
Labs not Rcvd	3	0	1	0										



Containerboard Interlaboratory Testing Program
Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42H2
TAPPI Official Test Method T807

Report #641
February 2023

Key to Instrument Codes Reported by Participants

AH	Perkins Model AH	AK	L & W Autoline 300
AL	L & W Autoline 400	AX	Perkins Mullen Tester (model not specified)
LA	L&W Bursting Strength Tester	LB	L&W Burst-O-Matic
LC	L&W Autoline (205 Enrollment)	LJ	L&W Bursting Strength Tester J-Type
LZ	L&W (model not specified)	ME	Messmer Automatic Burst Tester ME-06
RE	Regmed/Mullen Tester	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 207
Bursting Strength (Mullen), 35 lb Linerboard - 35E3
 TAPPI Official Test Method T807

Report #641
February 2023

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	
23UJ67	98.5	93.3	90.5	96.5	94.7	0.69	8.5	3.5	94.5	0.89	6.9	2.7	12	AH
2P6GQK_AL	93.6	94.4	92.9	89.4 L	92.5	0.15	5.3	2.2	92.3	0.16	6.5	1.6	12	AL
3LMLJL	90.9	90.2	91.7	91.6	91.1	-0.21	6.5	0.7	90.5	-0.42	6.0	1.3	12	TP
3Y6JFA	83.4	81.1 XH	83.9	82.0 *	82.6	-2.34 *	9.3	1.3	85.9	-1.98 *	8.5	4.0	12	LA
4QTPYM_AL	91.2	88.0	90.0	90.9	90.0	-0.48	6.5	1.4	89.2	-0.88	5.8	2.4	12	AL
68EHBX_AL	94.6	95.0	96.9	96.1	95.7	0.93	6.6	1.0	93.8	0.66	6.1	2.5	12	AL
6PVNG2_AL	93.7	87.6	95.1	88.3	91.2	-0.19	8.2	3.8	92.8	0.34	7.3	4.5	12	AL
6TUZHT	94.5	90.6	95.4	93.8	93.6	0.42	7.1	2.1	92.5	0.24	8.6	3.2	12	LC
7ZCQF9	No DATA	90.2	No DATA	98.2 L	94.2	0.57	3.8	5.7	94.0	0.72	4.7	3.4	9	AH
8B3247_AL	97.7	129.8 XH	92.1 H	78.7 X	99.6	1.91	14.1	21.7 H	205.2	37.85 X	206.8	165.4 H	8	AL
A4BM7A	88.9	91.5	91.3	92.9	91.2	-0.19	7.0	1.7	96.9	1.71	8.7	10.4 H	12	XX
BW9X3B	91.0 L	90.4	93.6	87.9	90.7	-0.30	5.0	2.3	89.6	-0.74	5.7	1.8	11	XX
C4B3Y2_AL	93.2	87.8	88.5	91.4	90.2	-0.43	8.1	2.5	90.6	-0.39	8.6	2.0	10	AL
C4T7CT	88.5	88.3	92.4	89.6	89.7	-0.57	8.1	1.9	90.9	-0.30	7.8	2.0	12	LC
D24YNQ	85.9	87.1	83.7	88.0	86.2	-1.44	8.4	1.9	87.9	-1.30	8.2	2.6	12	LA
D3BEWG	103.0 *	96.5	96.0	96.2	97.9	1.50	8.6	3.4	97.5	1.91	8.5	4.0	12	AX
DBRXCA	88.8	84.8	87.8	93.5	88.7	-0.81	9.0	3.6	88.7	-1.03	9.0	3.6	4	XX
DML826_AL	99.7	94.1	99.7	99.1	98.2	1.56	8.3	2.7	94.3	0.85	7.9	3.8	12	XX
DUH4P8_AL	90.8	95.5	93.4	92.2	93.0	0.26	10.5	2.0	91.9	0.03	8.8	3.8	12	AL
F8HMGH	99.6	94.0	92.4	92.4	94.6	0.67	8.8	3.4	93.7	0.62	8.1	3.1	12	AH
FXUQDW	82.0	89.8	86.5	89.1	86.9	-1.27	6.2	3.5	87.4	-1.47	6.5	2.9	12	LA
G2NAQE	91.1	90.4	91.3	88.8	90.4	-0.38	8.1	1.1	91.0	-0.25	8.1	3.0	12	LA
GHEAKY	90.6	86.4	92.6	87.6	89.3	-0.66	7.3	2.8	88.8	-0.99	8.2	3.7	12	AH
GHEAKY_AL	89.8	90.7	87.8	90.1	89.6	-0.58	9.0	1.3	89.5	-0.76	9.4	1.9	12	AL
GQRYPY	83.7	83.9 *	82.1 *	88.0	84.4	-1.88	5.7	2.5	83.8	-2.66 *	6.4	3.0	12	LA
HMQBKW	98.5	96.0	97.4	92.6	96.1	1.05	9.1	2.5	94.7	0.99	7.7	2.4	12	TP
HMQBKW_A	86.6	86.8	85.9	85.1 L	86.1	-1.46	5.5	0.8	86.6	-1.75	5.3	0.9 L	12	XX
HPQN3V_AL	94.7	91.4	94.0	95.1	93.8	0.47	7.8	1.7	93.9	0.70	8.2	2.5	12	AK
KP4W82_AL	84.6 H	94.2	89.6	89.2	89.4	-0.63	11.0	3.9	91.9	0.04	9.3	6.3	12	AL
KYRURE	91.8	88.1	95.6	93.3	92.2	0.07	8.1	3.1	91.7	-0.05	8.9	2.4	12	LC
LCV4V4	89.0	90.9	90.7	91.0	90.4	-0.38	6.2	0.9	91.3	-0.17	6.5	1.3	12	AH
LKNNHF	92.8	92.5	95.2	94.2	93.7	0.43	8.5	1.2	92.5	0.23	8.3	2.3	12	LZ
M32UZQ	93.5	93.5	87.5	91.0	91.4	-0.14	7.4	2.8	92.5	0.24	7.7	2.6	12	XX
MXP2TX_AL	93.7	94.0	88.3	87.9	91.0	-0.24	7.1	3.3	89.7	-0.70	8.6	4.1	11	AL
MZF2C3	94.5	92.9	99.5 H	97.6	96.1	1.05	9.9	3.0	92.5	0.25	9.2	4.7	12	LB



Containerboard Interlaboratory Testing Program
 Analysis 207
Bursting Strength (Mullen), 35 lb Linerboard - 35E3
 TAPPI Official Test Method T807

Report #641
February 2023

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	
N97VXY	95.2	94.8	97.5	94.7	95.5	0.90	7.9	1.3	89.1	-0.89	6.4	7.7	12	LC
N97VXY_AL	95.2	93.7	99.4	94.7	95.7	0.95	6.6	2.5	94.4	0.87	7.3	2.7	12	XX
N9NUZ4	97.4	92.5	94.5	85.3	92.4	0.13	10.2	5.2	93.4	0.54	9.7	4.4	12	LJ
NYY4J3	96.0	91.0	88.1	92.4	91.9	-0.01	6.0	3.3	93.6	0.60	5.5	2.5	12	LA
QCYRHA	98.9	95.4	96.3	93.6	96.1	1.03	7.1	2.2	95.3	1.18	7.6	3.0	12	LA
QCYRHA_AL	90.6	93.3	88.9	90.5	90.8	-0.28	6.2	1.8	92.0	0.06	5.4	2.9	12	AL
QHP2R9	87.8	88.0	82.7 *	84.5	85.8	-1.55	8.4	2.6	87.4	-1.47	10.2	2.8	12	LA
QVTMUX	No DATA	94.8	91.8	92.8	93.1	0.30	7.8	1.5	94.1	0.77	6.7	1.9	10	AX
QVTMUX_AI	No DATA	91.5	93.3	90.5	91.8	-0.04	6.6	1.4	91.0	-0.27	7.0	2.0	10	AL
RJ9K4P_AL	92.7	91.2 H	97.5	91.8	93.3	0.35	9.8	2.8	92.9	0.38	9.4	4.2	12	AL
RP63PW	78.6 *	83.4 *	78.6 X	78.6 X	79.8	-3.04 X	5.9	2.4	78.3	-4.52 X	6.0	3.2	12	RE
T3MCN8	86.3	89.9	93.6	89.4	89.8	-0.53	8.9	3.0	97.6	1.92	8.4	12.8 H	12	LA
U88V2L	83.7	76.9 X	82.7 *	82.1 *	81.4	-2.65 *	8.0	3.0	88.5	-1.10	7.5	7.0	12	AH
UCM4Q7	90.9 L	91.8 L	91.9 L	91.1 L	91.4	-0.13	2.7	0.5 L	90.9	-0.29	5.6	0.5 L	12	LA
UF6LLW	102.0 L	102.2 X	102.0 *L	102.5 *	102.2	2.56 *	3.8	0.2 L	103.0	3.73 X	3.6	1.8	12	AH
V9HXMK_AL	94.0	93.4	93.2	95.5	94.0	0.52	6.7	1.0	94.2	0.80	6.5	1.3	12	AK
VQEH46_AL	12.7 XL	12.2 XL	11.9 XL	12.3 XL	12.3	-19.93 X	1.3	0.3 L	61.8	-10.00 X	6.7	36.8 H	12	AL
WQVWBE	90.6	83.8 *	91.5	90.5	89.1	-0.70	6.7	3.5	89.4	-0.81	7.7	3.4	12	LA
X3NTUR	89.3	91.6	94.3	93.4	92.1	0.05	7.9	2.2	92.1	0.10	7.7	2.9	12	ME
Y6RVCG	110.4 X	93.1	91.7	92.8	97.0	1.27	6.9	8.9 H	94.1	0.75	7.8	6.1	12	TB
YC8QUW	93.4 L	92.0 L	91.8 L	92.6 L	92.5	0.13	2.0	0.7	94.8	1.01	3.4	2.6	12	LA
YHFXU9	84.5	86.8	91.9	90.4	88.4	-0.88	9.1	3.4	88.2	-1.21	8.6	3.3	12	LA
ZEQ6XW	91.3	91.1	92.6	92.2	91.8	-0.03	5.1	0.7	92.8	0.33	4.5	0.8 L	12	LJ
ZEWD7J	100.8	97.4	94.0	99.0	97.8	1.47	6.4	2.9	97.7	1.96 *	7.9	3.1	12	AH

Consensus (All Labs) Results														
Wk Mean	91.92	91.13	92.01	91.66	Month Mean	91.93			Grand Mean	91.79				
Avg SDr	7.88	7.33	7.86	7.57	Avg SD	7.73			Avg SD	7.61				
SD btwn Labs	5.28	3.38	4.45	4.03	SD btwn Labs	4.00			SD btwn Labs	3.00				
Labs Incl	54	54	56	56	SD btwn Wks	4.01			SD btwn Wks	3.98				
Labs Excl	2	5	2	3	Labs Incl	57			Labs Incl	55				
Labs not Rcvd	3	0	1	0										



Containerboard Interlaboratory Testing Program
Analysis 207
Bursting Strength (Mullen), 35 lb Linerboard - 35E3
TAPPI Official Test Method T807

Report #641
February 2023

Key to Instrument Codes Reported by Participants

AH	Perkins Model AH	AK	L & W Autoline 300
AL	L & W Autoline 400	AX	Perkins Mullen Tester (model not specified)
LA	L&W Bursting Strength Tester	LB	L&W Burst-O-Matic
LC	L&W Autoline (207 Enrollment)	LJ	L&W Bursting Strength Tester J-Type
LZ	L&W (model not specified)	ME	Messmer Automatic Burst Tester ME-06
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 - 42H2
 TAPPI Official Test Method T822

Report #641
February 2023

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	
23UJ67	96.5	95.4 L	95.7	96.5	96.0	0.15	2.5	0.5	95.6	-0.05	2.4	2.5	12	LD
3LMLJL	95.5 L	93.2	93.8	94.1	94.1	-0.56	2.9	1.0	94.6	-0.37	2.6	1.2	12	TH
3Y6JFA	93.8	93.8	94.0	93.7	93.8	-0.66	3.6	0.1 L	91.8	-1.26	2.8	1.5	12	LZ
6TUZHT	94.5	94.6	93.8	93.6	94.1	-0.56	2.5	0.5	93.7	-0.68	2.4	1.2	12	LD
8B3247	70.6 XH	95.2	70.9 XH	61.2 XH	74.5	-7.91 X	6.6	14.5 H	74.5	-6.83 X	6.6	14.5 H	4	LC
8M2MQ4	99.6	101.6 *	98.6	104.0 *	101.0	2.00 *	4.3	2.4	90.7	-1.61	4.7	8.6 H	12	LD
94JV9K	94.1	100.4	96.6	98.6	97.4	0.68	2.9	2.7	98.8	0.95	2.8	2.6	12	LD
9UW9Q3	93.0	96.0 L	91.3	96.2	94.1	-0.55	3.3	2.4	94.1	-0.53	3.3	2.4	4	RS
AHYKEZ	94.2	94.2 L	94.1 L	94.0	94.1	-0.55	1.8	0.1 L	94.1	-0.53	1.8	0.5 L	12	MB
BW9X3B	98.1	100.2	98.6	96.7	98.4	1.05	3.6	1.4	101.6	1.88	3.1	3.1	11	TU
C4B3Y2	96.4	94.1	95.2	97.2	95.7	0.05	2.7	1.4	98.2	0.77	3.2	3.6	10	LD
C4T7CT	97.1	94.1	96.1	95.9	95.8	0.08	3.4	1.3	97.1	0.42	4.5	1.8	12	LD
D3BEWG	90.6 *	91.8	95.0	94.2	92.9	-1.01	3.1	2.0	91.9	-1.23	3.4	1.6	12	LD
DCZAUC	95.2	95.1	93.7	96.1	95.0	-0.22	3.0	1.0	94.0	-0.56	3.2	1.2	12	LC
DF2DLY	78.0 X	82.5 X	80.1 X	82.1 X	80.7	-5.59 X	3.4	2.1	80.0	-5.04 X	4.4	2.4	12	EM
DML826	98.8	97.9 L	97.8	96.3	97.7	0.79	3.3	1.0	98.6	0.89	4.2	2.9	12	LZ
DP7HEF	93.2 L	94.4 L	94.5 L	93.3 L	93.8	-0.66	1.6	0.7	93.6	-0.71	2.6	0.8	12	TH
DUH4P8	100.0	97.6	95.8	98.7	98.0	0.90	2.5	1.8	97.8	0.66	2.2	1.8	12	LD
E77RVQ	98.7 L	97.8	100.2 L	99.1	98.9	1.24	2.7	1.0	98.1	0.74	3.1	1.2	12	EM
FXUQDW	97.8	94.4	96.4	97.1	96.4	0.30	2.9	1.4	95.5	-0.10	2.9	1.2	12	LD
G2NAQE	93.8	92.4	89.7 *	89.3 *	91.3	-1.62	2.7	2.2	93.6	-0.69	2.7	2.8	12	LD
GQRYPY	96.9 H	97.5 H	95.6 H	91.3 H	95.3	-0.11	18.9	2.8	110.1	4.60 X	17.2	19.7 H	12	LB
HMQBKW	97.9	99.2	98.5	98.9	98.6	1.12	2.6	0.6	97.1	0.44	2.7	1.5	12	LD
HPQN3V	92.0	93.0	94.1	90.8 L	92.5	-1.18	2.9	1.4	92.2	-1.15	3.0	1.4	12	LD
K2Y8EM	90.9 *	92.5 L	95.4	95.6	93.6	-0.76	2.8	2.3	93.4	-0.76	2.9	1.7	12	EN
KP4W82	95.0	101.3 *	99.1	100.5	99.0	1.26	3.3	2.8	98.0	0.72	4.1	2.6	12	LC
KYRURE	94.7	94.5 L	96.1	95.0	95.1	-0.20	2.9	0.7	97.8	0.65	3.1	2.4	12	MB
LKNNHF	95.1	92.7	94.5	94.5	94.2	-0.53	3.4	1.0	92.2	-1.13	3.0	2.6	12	LC
LRMFHX	100.7 *	99.2	100.5 *	102.2 L	100.7	1.89	2.4	1.2	102.4	2.13 *	3.0	2.9	12	MB
MQPGPG	103.7 X	99.1 H	105.2 X	96.3	101.1	2.05 *	4.6	4.1 H	102.5	2.16 *	4.9	3.1	12	TU
MZF2C3	97.1	93.2	99.1	92.8 L	95.6	-0.02	3.1	3.1	95.9	0.04	3.1	2.6	12	LC
N97VXY	92.2	94.8	91.9	88.3 *	91.8	-1.43	3.7	2.7	91.1	-1.50	3.4	2.8	12	LD
NY4J3	95.9	93.3	91.4	92.3	93.2	-0.89	2.4	1.9	90.5	-1.70	3.0	3.2	12	LC
Q86UTJ	95.2	92.1	90.5	93.6	92.8	-1.04	3.3	2.0	94.6	-0.36	3.3	2.2	12	LD
QCYRHA	98.6	94.8	95.7	93.9	95.8	0.06	3.1	2.0	95.3	-0.15	3.2	1.8	12	LD



Containerboard Interlaboratory Testing Program

Analysis 215

Report #641

February 2023

Ring Crush, 42 lb Linerboard - 42H2

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	
QHP2R9	95.7	97.9	95.6	95.1	96.1	0.17	3.1	1.2	96.6	0.27	2.7	1.5	12	LD
RJ9K4P	72.0 XH	70.5 X	69.8 X	66.4 X	69.7	-9.71 X	6.4	2.4	85.2	-3.38 X	5.1	11.6 H	12	LD
RP63PW	96.0	91.2 H	83.3 XH	85.7 XH	89.1	-2.45 *	7.4	5.7 H	96.4	0.20	4.9	6.7 H	12	EX
U88V2L	96.7	96.8	96.7	99.9	97.5	0.72	2.7	1.6	97.3	0.49	2.5	1.2	12	LC
UF6LLW	97.1	96.9	96.8	96.5	96.8	0.46	2.9	0.2 L	96.3	0.16	2.5	3.0	12	LD
V9HXMK	94.5	93.0 L	91.7	92.5	92.9	-1.00	2.8	1.2	94.4	-0.43	2.5	3.2	12	LD
WB38CC	95.7	95.9	95.5	95.2 L	95.6	0.00	2.4	0.3 L	97.3	0.49	2.6	2.0	12	TH
X3NTUR	100.5 *	100.8	99.6	101.1	100.5	1.84	3.2	0.6	101.9	1.96 *	4.2	1.9	11	LX
Y6RVCG	106.0 X	98.4	112.7 X	102.2	104.8	3.44 X	3.8	6.1 H	99.2	1.11	3.2	5.4	12	LD
YC8QUW	95.3 L	95.0 L	95.7 L	95.3 L	95.3	-0.11	1.0	0.3 L	97.3	0.48	1.4	1.7	12	TU
ZEQ6XW	96.4	96.7	96.2	96.4	96.4	0.30	2.9	0.2 L	96.0	0.08	2.4	0.4 L	12	LD
ZEWD7J	92.4	95.0	94.2	95.6 L	94.3	-0.50	2.7	1.4	90.7	-1.62	3.0	5.6	12	LG
ZXP3GR	93.2	95.5 L	94.6 L	93.8 L	94.3	-0.50	1.7	1.0	93.9	-0.59	2.4	0.9	12	TH

Consensus (All Labs) Results									
Wk Mean	95.73	95.75	95.47	95.77	Month Mean	95.61	Grand Mean	95.77	
Avg SDr	4.02	4.38	4.05	4.06	Avg SD	4.21	Avg SD	3.16	
SD btwn Labs	2.48	2.72	2.57	3.32	SD btwn Labs	2.67	SD btwn Labs	3.12	
Labs Incl	43	46	42	44	SD btwn Wks	1.88	SD btwn Wks	2.90	
Labs Excl	5	2	6	4	Labs Incl	44	Labs Incl	44	
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)	LB	L&W Crush Tester 240
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
TU	TMI Universal Crush Tester (TMI K440)		



Containerboard Interlaboratory Testing Program
 Analysis 217
Ring Crush, 35 lb Linerboard - 35E3
 TAPPI Official Test Method T822

Report #641
February 2023

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	
23UJ67	82.3	83.0	84.0	83.4	83.2	0.64	3.2	0.7	82.1	0.01	3.0	1.9	12	LD
3LMLJL	80.6	81.9	80.8	81.9	81.3	-0.12	3.8	0.7	81.3	-0.27	3.4	1.6	12	TH
3Y6JFA	79.4	82.7	83.7	81.9	81.9	0.13	3.3	1.8	78.7	-1.20	3.5	2.7	12	LZ
6TUZHT	84.4	83.4	84.2	83.2 L	83.8	0.91	2.8	0.6	82.9	0.29	2.9	1.6	12	LD
8B3247	74.8 *H	61.6 XH	60.1 XH	72.5 *	67.3	-5.93 X	8.3	7.5 H	75.1	-2.45 *7.0	14.9 H	8	LC	
8M2MQ4	74.6 *	76.4 *	76.6	75.9	75.9	-2.37 *	3.8	0.9	71.3	-3.77 X4.0	5.7	8	LD	
94JV9K	83.0	82.5	84.1	87.5	84.3	1.09	3.3	2.3	84.7	0.92	3.1	2.0	12	LD
9UW9Q3	81.5	78.6	76.4	77.2	78.4	-1.32	3.9	2.3	78.4	-1.28	3.9	2.3	4	RS
AHYKEZ	82.5 L	80.1 L	80.0 L	80.7 L	80.8	-0.32	1.8	1.2	81.6	-0.16	1.7	1.6	12	MB
BW9X3B	82.7	84.5	83.3	85.0	83.9	0.94	3.5	1.1	82.1	0.00	3.3	2.6	11	TU
C4B3Y2	83.8	81.4	82.6	84.8	83.2	0.64	4.1	1.4	84.1	0.70	4.0	2.2	10	LD
C4T7CT	80.4	85.4	84.8	85.3	84.0	0.97	5.0	2.4	83.3	0.45	4.5	1.5	12	LD
D3BEWG	78.0	77.2	80.9	82.5	79.7	-0.81	4.9	2.5	79.6	-0.88	4.3	1.8	12	LD
DCZAUC	74.4 *H	78.4	80.7	80.1	78.4	-1.32	6.5	2.8	79.2	-1.00	5.2	1.9	12	LC
DF2DLY	66.5 X	67.5 X	67.8 XL	66.6 X	67.1	-6.00 X	3.2	0.7	68.4	-4.81 X4.3	5.9	12	EM	
DML826	83.6	86.2	83.8	85.0	84.7	1.26	3.9	1.2	84.7	0.92	4.1	1.2	12	LZ
DP7HEF	80.4 L	79.2	82.5 L	81.9 L	81.0	-0.26	1.7	1.5	79.8	-0.79	2.2	1.6	8	TH
DUH4P8	83.5	82.3	82.3	83.8	83.0	0.56	2.8	0.8	83.3	0.42	2.9	1.4	12	LD
E77RVQ	81.7	82.8	81.4 L	82.6	82.1	0.20	3.0	0.7	82.6	0.17	3.2	1.3	12	EM
FXUQDW	85.1	86.3	85.6	86.2	85.8	1.73	2.9	0.6	84.5	0.85	3.0	1.4	12	LD
G2NAQE	80.4	80.1	79.9	79.3	79.9	-0.70	2.6	0.4	80.9	-0.42	2.6	1.6	12	LD
GQRYPY	69.5 XH	69.4 XH	71.4 *H	70.6 *H	70.2	-4.69 X	13.9	0.9	70.8	-3.94 X14.1	1.5	12	LB	
HMQBKW	82.4	83.5	85.1	83.2	83.5	0.80	3.4	1.2	83.8	0.59	2.9	0.8 L	12	LD
HPQN3V	80.5	80.1	78.6	78.2	79.4	-0.93	4.1	1.1	78.9	-1.11	3.9	1.0	12	LD
K2Y8EM	80.2	80.5	80.9	83.3	81.2	-0.16	3.0	1.4	81.6	-0.18	3.4	1.4	12	EN
KP4W82	79.7	81.8 H	82.7	83.2	81.9	0.10	5.7	1.5	83.5	0.48	5.6	1.9	12	LC
KYRURE	79.8	83.7	81.7	88.1	83.3	0.72	3.3	3.6	85.3	1.12	3.5	5.3	12	MB
LKNNHF	80.3	80.0	81.5	79.6	80.3	-0.52	3.5	0.8	76.6	-1.92	3.5	4.4	12	LC
LRMFHX	94.0 X	91.0 X	91.2 *	92.4 *	92.1	4.35 X	3.8	1.4	88.2	2.14 *3.8	4.0	12	MB	
MQPGPG	81.8 H	86.4 *H	88.5	99.1 X	89.0	3.04 X	7.2	7.3 H	88.7	2.32 *5.4	4.3	12	TU	
MZF2C3	81.2	77.6	78.6	85.1	80.6	-0.41	3.5	3.4	83.6	0.55	3.8	3.7	12	LC
N97VXY	85.0	78.9	79.5	78.7	80.5	-0.45	3.9	3.0	78.3	-1.32	3.5	3.2	12	LD
NY4J3	83.5	82.4	80.6	76.0	80.6	-0.41	4.3	3.3	78.8	-1.14	4.3	2.9	12	LC
Q86UTJ	78.2	78.6	78.3	78.7	78.4	-1.31	2.9	0.2 L	80.3	-0.62	4.1	1.9	12	LD
QHP2R9	82.1	80.1	80.9	82.7	81.4	-0.08	4.0	1.2	82.9	0.27	3.9	1.9	12	LD



Containerboard Interlaboratory Testing Program
 Analysis 217
Ring Crush, 35 lb Linerboard - 35E3
 TAPPI Official Test Method T822

Report #641
February 2023

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	
RJ9K4P	59.7 XH	57.8 XH	61.3 XH	57.6 XH	59.1	-9.30 X	8.3	1.7	72.4	-3.39 X	5.4	10.0 H	12	LD
RP63PW	81.2	80.6 H	72.2 *H	72.4 *H	76.6	-2.07 *	7.3	5.0 H	83.1	0.36	5.2	5.6	12	EX
U88V2L	84.5	84.7	85.2	84.0	84.6	1.24	3.9	0.5	83.6	0.55	3.6	1.0	12	LC
UF6LLW	78.0	77.5	77.5 L	77.2 L	77.5	-1.68	2.7	0.3 L	79.2	-1.01	2.3	1.9	12	LD
V9HXMK	81.4	79.7	77.0	78.6 L	79.2	-1.00	2.8	1.8	81.1	-0.35	2.8	2.0	12	LD
WB38CC	85.2	82.3	82.6	82.5	83.2	0.64	2.8	1.4	83.1	0.35	2.5	1.0	12	TH
X3NTUR	75.4 *H	82.0	82.4	88.4	82.1	0.19	5.9	5.3 H	85.2	1.09	5.2	5.3	11	LX
Y6RVCG	86.5	82.2	91.2 *	87.6	86.9	2.17 *	5.6	3.7	83.6	0.53	4.9	4.9	12	LC
YC8QUW	83.2 L	82.8 L	82.7 L	82.7 L	82.8	0.51	0.9	0.2 L	81.8	-0.09	1.9	1.1	12	TU
ZEQ6XW	83.2	82.4	82.8	83.0	82.9	0.52	3.9	0.4	82.7	0.22	3.2	0.3 L	12	LD
ZEWD7J	82.4	81.8	81.9	81.3	81.8	0.10	3.3	0.4	86.6	1.59	3.3	6.1	12	LG
ZXP3GR	81.4	81.4 L	82.5 L	82.8 L	82.0	0.18	1.4	0.7	80.0	-0.71	2.1	2.2	8	XX

Consensus (All Labs) Results									
Wk Mean	81.26	81.50	81.71	81.83	Month Mean	81.61	Grand Mean	82.07	
Avg SDr	4.42	4.06	4.27	4.36	Avg SD	3.85	Avg SD	3.79	
SD btwn Labs	2.86	2.51	3.88	4.39	SD btwn Labs	2.42	SD btwn Labs	2.85	
Labs Incl	43	42	44	44	SD btwn Wks	2.05	SD btwn Wks	3.57	
Labs Excl	4	5	3	3	Labs Incl	41	Labs Incl	43	
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)	LB	L&W Crush Tester 240
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
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program

Analysis 223

Report #641

February 2023

STFI, 42 lb Linerboard - 42H2

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
23UJ67	23.6	22.8	23.7	H 22.8	23.2	-0.27	1.9	0.5	23.1	-0.57	1.9	0.6	12	LU
2P6GQK	22.5	23.5	23.5	24.0 L	23.4	-0.15	1.7	0.6	23.4	-0.31	1.6	0.7	12	LU
3BYT66	22.8 L	22.9	23.5	L 22.8 L	23.0	-0.46	1.1	0.3	23.3	-0.34	1.4	0.8	12	XX
3LMLJL	23.8	23.8	23.7	23.6	23.7	0.14	1.3	0.1 L	23.6	-0.07	1.4	0.6	12	XX
3Y6JFA	22.3 L	21.0 *L	21.5	23.6	22.1	-1.18	1.2	1.1	22.4	-1.17	1.3	1.0	12	LA
4QTPYM_AL	24.4	23.7	25.5	H 25.2	24.7	0.94	2.1	0.8	24.5	0.72	2.0	0.8	8	AL
68EHBX_AL	24.9 H	25.0	25.0	24.3	24.8	1.04	1.9	0.3	24.3	0.52	1.9	0.5	12	AL
6PVGNG2_AL	26.4 *	26.4 *	26.4 *	26.4 *	26.4	2.31 *	2.1	0.0 L	26.4	2.36 *	2.0	0.1 L	12	AL
6TUZHT	24.7	23.4	23.3	23.3	23.7	0.11	1.6	0.7	23.7	0.03	1.7	0.4	12	LA
7ZCQF9	No DATA	25.6	No DATA	24.7	25.2	1.30	1.5	0.7	25.1	1.24	1.8	0.4	7	LU
8CEQHC	23.3	23.3	23.3	No DATA	23.3	-0.21	1.7	0.0 L	23.5	-0.21	1.6	0.2	7	LA
94JV9K	26.3 *	25.0	25.6	25.4	25.6	1.64	1.8	0.6	25.4	1.54	2.0	0.6	12	LH
9ZLGLU	24.7	24.1	23.6	23.9 H	24.1	0.42	2.0	0.4	24.1	0.39	2.1	0.5	12	LH
A4BM7A	22.9	22.6	23.7	22.4	22.9	-0.54	1.5	0.6	22.7	-0.89	1.4	0.5	12	LH
BW9X3B	24.2	24.3	24.8	24.5	24.4	0.72	1.9	0.3	24.8	0.98	2.0	0.4	11	TT
C4B3Y2_AL	24.9	25.2	25.2	24.8	25.0	1.20	1.7	0.2	25.6	1.67	3.5	1.0	10	AL
C4T7CT	24.7	22.7	23.9	23.4 H	23.7	0.09	2.2	0.8	23.6	-0.14	2.0	1.1	12	LA
D24YNQ	24.3	22.7	23.5	24.4	23.7	0.14	2.2	0.8	23.9	0.17	2.1	1.2	12	LH
D3BEWG	23.9 L	23.8 L	24.4 L	24.4 L	24.1	0.44	0.7	0.3	23.8	0.12	0.7	0.4	12	LH
DML826_AL	24.0	23.0	23.0	23.8	23.5	-0.06	1.4	0.5	23.6	-0.13	1.6	0.7	12	AL
DP7HEF	23.3 L	23.3 L	23.7 L	23.2 L	23.4	-0.16	0.7	0.2	22.7	-0.89	1.2	0.9	12	LZ
DUH4P8_AL	23.3 H	24.0	23.7 L	23.3	23.6	0.02	1.7	0.3	23.1	-0.54	1.4	1.3	12	AL
FXUQDW	23.6	24.2	23.8	23.9	23.8	0.24	1.7	0.3	23.4	-0.27	1.6	0.5	12	LA
G2NAQE	22.8	21.8	23.0	23.3	22.7	-0.67	1.6	0.6	23.0	-0.61	1.7	0.5	12	LZ
GHEAKY	21.2 *	20.2 *	22.6	22.2	21.6	-1.63	1.9	1.1	22.1	-1.42	1.8	0.8	12	LH
GHEAKY_AL	19.7 X	21.0 *	21.2	21.2 *	20.8	-2.28 *	1.6	0.7	21.9	-1.62	1.7	1.1	12	AL
GQRYPY	23.9	24.4	22.6 H	23.7	23.7	0.08	2.3	0.8	24.3	0.50	2.2	0.8	12	LH
HMQBKW_A	23.8	23.0	24.1	24.0	23.7	0.11	1.7	0.5	23.8	0.09	1.8	0.4	12	XX
HPQN3V_AL	23.2	24.5	24.2	23.4	23.8	0.22	1.9	0.6	24.3	0.48	1.9	0.9	12	AL
J7TPET	23.6	22.6	22.4	22.7	22.8	-0.58	1.8	0.5	22.9	-0.71	1.7	0.5	12	LW
JH8KT8	23.2	24.5	23.6	24.0	23.8	0.23	1.6	0.5	23.8	0.06	1.8	0.3	12	LA
K2Y8EM	21.6	22.0	21.3	22.4	21.8	-1.41	1.8	0.5	22.1	-1.40	1.6	0.6	12	LY
KP4W82	26.9 *	24.3	23.6	23.9	24.7	0.90	1.9	1.5 H	24.4	0.63	2.0	1.5	11	LU
KYRURE	24.2	23.5	23.0 L	22.9	23.4	-0.14	1.5	0.6	25.0	1.13	1.7	2.1 H	12	LA
LKNNHF	21.2 *	20.9 *	20.2 *	21.4 *	20.9	-2.16 *	1.6	0.5	21.2	-2.26 *	1.7	1.2	12	LY



Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42H2

TAPPI Official Test Method T826

Report #641

February 2023

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
LRMFHX	24.4	22.4	23.5 L	22.1	23.1	-0.37	1.6	1.1	24.9	1.03	1.2	1.5	12	LA
MQPGPG	22.7	23.8	24.6	24.1	23.8	0.20	2.0	0.8	24.9	1.08	2.0	1.2	12	LA
MZF2C3	41.2 XH	46.4 XH	46.6 XH	44.7 XH	44.7	17.33 X	3.5	2.5 H	30.3	5.83 X	2.4	10.8 H	12	LW
N97VXY	18.9 X	22.7	22.2	17.9 X	20.4	-2.58 *	1.6	2.4 H	21.3	-2.17 *	1.5	2.1 H	12	LZ
N97VXY_AL	44.7 XL	46.9 XL	45.7 XL	51.4 XL	47.2	19.34 X	0.0	2.9 H	46.0	19.86 X	0.0	2.0 H	12	AL
N9NUZ4	27.2 *	27.1 X	26.8 *	26.5 *	26.9	2.72 *	1.9	0.3	26.6	2.61 *	1.9	0.6	12	LH
NYY4J3	23.5	23.5	23.5	23.9	23.6	0.03	1.6	0.2	23.7	-0.01	1.8	0.3	12	LA
PUJXG2	24.2	23.9	24.5	25.0 L	24.4	0.72	1.4	0.5	24.5	0.73	1.5	1.1	12	LA
QCYRHA_AL	23.2	22.8	23.5	23.6	23.3	-0.22	1.6	0.4	23.5	-0.16	1.7	0.4	12	AL
QHP2R9	23.8	22.8	23.4	23.6	23.4	-0.13	1.9	0.4	23.4	-0.27	1.4	0.6	12	LY
QVTMUX	No DATA	23.6	22.9	23.3	23.2	-0.27	1.7	0.4	24.3	0.51	1.8	0.9	8	LU
QVTMUX_AI	No DATA	22.8	21.6	22.2 L	22.2	-1.10	1.3	0.6	23.4	-0.25	1.4	1.1	8	AL
R4W2A6	23.4	23.6	24.4	24.4	24.0	0.32	1.5	0.5	24.0	0.27	1.6	0.6	12	LH
RJ9K4P	23.2	23.0	22.7	23.1	23.0	-0.44	2.0	0.2	22.9	-0.68	2.0	0.5	12	LY
RJ9K4P_AL	23.8	24.7	23.1	23.6	23.8	0.18	1.6	0.7	23.7	0.00	1.7	0.6	12	AL
T3MCN8	21.7	22.8	22.6	23.0	22.5	-0.85	2.0	0.6	22.4	-1.13	1.8	0.5	12	LU
U88V2L	23.9	23.5	23.7	24.0	23.8	0.18	1.7	0.2	23.7	-0.02	1.7	0.4	12	LU
UCM4Q7	24.3	24.3	24.5	24.2	24.3	0.62	1.9	0.1	24.3	0.54	1.9	0.2 L	12	LA
V9HXMK_AL	24.3	23.0	23.6	23.6	23.6	0.05	1.9	0.5	24.3	0.56	1.9	1.0	12	AK
VH8LLT	24.0 H	24.0 H	23.9 H	23.6	23.9	0.27	2.6	0.2	23.8	0.08	2.5	0.4	12	LY
VQEH46_AL	24.5	23.7	24.3	24.8	24.3	0.63	1.8	0.5	24.1	0.33	2.0	0.6	12	AL
VYVYXZ	24.9	23.9	25.2 H	23.9	24.5	0.76	2.1	0.7	24.6	0.83	1.9	0.6	8	ID
WQVWBE	23.5	24.4	24.5	23.0	23.8	0.23	1.8	0.7	22.9	-0.74	1.8	1.0	12	LY
X3NTUR	23.4	22.1	18.4 XH	24.6	22.1	-1.16	2.1	2.7 H	23.2	-0.50	2.4	1.9 H	12	LZ
XEWPKN	25.5	24.9	24.4 L	24.7	24.9	1.08	1.2	0.5	25.1	1.26	1.3	0.4	12	LH
Y6RVCG	23.2 H	25.4	25.2	25.3 H	24.8	0.99	2.3	1.1	23.8	0.09	2.2	1.0	12	LW
YC8QUW	20.5 *	20.7 *	20.6 *	20.5 X	20.6	-2.44 *	1.6	0.1 L	20.9	-2.54 *	1.8	0.4	8	XX
ZEWD7J	24.3	23.4	24.4	24.8	24.2	0.52	1.9	0.6	24.3	0.51	2.0	0.5	12	BK
ZXP3GR	23.2 L	23.2 L	23.2 L	23.1 L	23.2	-0.32	0.5	0.0 L	22.5	-1.05	1.1	0.6	12	LZ

Consensus (All Labs) Results													
Wk Mean	23.77	23.41	23.62	23.75	Month Mean	23.56			Grand Mean	23.71			
Avg SDr	1.74	1.66	1.85	1.75	Avg SD	1.75			Avg SD	1.81			
SD btwn Labs	1.28	1.21	1.26	1.03	SD btwn Labs	1.22			SD btwn Labs	1.12			
Labs Incl	57	61	60	59	SD btwn Wks	0.74			SD btwn Wks	0.87			
Labs Excl	4	3	3	4	Labs Incl	62			Labs Incl	62			
Labs not Rcvd	3	0	1	1									



Containerboard Interlaboratory Testing Program
Analysis 223
STFI, 42 lb Linerboard - 42H2
TAPPI Official Test Method T826

Report #641
February 2023

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E3

TAPPI Official Test Method T826

Report #641

February 2023

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	
23UJ67	22.0	23.1	21.3	22.8	22.3	-0.67	1.8	0.8	22.3	-0.79	1.8	0.7	12	LU
2P6GQK	22.6	23.3	23.8	22.9	23.1	0.02	1.8	0.5	22.9	-0.20	1.8	0.6	12	LU
3BYT66	21.7 L	20.3 *L	21.1 L	22.2 L	21.3	-1.50	0.0	0.8	22.9	-0.25	1.3	1.3	12	XX
3LMLJL	23.5	23.5	23.2	23.2	23.4	0.20	1.4	0.2	23.4	0.27	1.5	0.3 L	12	TT
3Y6JFA	22.0	22.5 H	23.7	23.2 H	22.8	-0.23	2.3	0.8	22.9	-0.21	2.0	1.2	12	LA
4QTPYM_AL	23.7	23.2	24.1	23.3	23.6	0.37	2.0	0.4	24.2	0.95	1.9	0.7	12	AL
68EBX_AL	23.1	23.5	24.0	22.7	23.3	0.19	1.8	0.6	23.4	0.30	1.7	0.6	12	XX
6PVNG2_AL	26.4 *	26.4 *	25.1	26.1 *	26.0	2.36 *	2.1	0.6	25.1	1.87	1.9	0.9	12	AL
6TUZHT	24.5	23.7	23.2	23.5	23.7	0.52	2.1	0.6	23.7	0.56	1.9	0.5	12	LA
7ZCQF9	No DATA	24.6	No DATA	22.9	23.7	0.51	1.9	1.2	24.1	0.89	2.0	0.8	9	LU
8CEQHC	23.7 L	22.8	22.3	No DATA	22.9	-0.15	1.3	0.7	22.4	-0.67	1.5	0.8	7	LA
94JV9K	24.7	25.4	24.6	24.5	24.8	1.38	1.8	0.4	24.7	1.46	1.8	0.4	12	LH
9ZLGLU	23.6	24.2	24.6	23.8	24.1	0.78	1.8	0.4	24.1	0.94	1.9	0.5	12	LH
A4BM7A	21.9	23.4	22.2	22.1	22.4	-0.59	1.5	0.7	22.5	-0.61	1.5	0.5	12	LH
BW9X3B	23.9	24.4	24.6	24.6	24.4	1.03	1.8	0.4	24.4	1.15	2.0	0.5	11	TT
C4B3Y2_AL	25.0	24.6	25.3	24.1	24.8	1.35	1.9	0.5	24.7	1.46	1.9	0.5	10	AL
C4T7CT	23.8	23.2	24.1	23.3	23.6	0.39	1.8	0.4	23.6	0.40	1.8	0.7	12	LA
D24YNQ	23.7	23.4	23.5	22.3	23.2	0.10	2.0	0.6	24.1	0.90	1.9	1.0	12	LH
D3BEWG	24.6	23.4 L	23.5 L	23.3 L	23.7	0.47	0.7	0.6	23.5	0.39	0.7	0.6	12	LH
DML826_AL	22.2	22.4	21.9	22.3	22.2	-0.77	1.7	0.2	22.7	-0.42	1.9	0.6	12	XX
DP7HEF	21.2 L	21.8 L	21.8 L	21.0 *L	21.4	-1.41	0.6	0.4	21.8	-1.18	1.2	0.6	8	LZ
DUH4P8_AL	22.4	22.4	23.9	24.3 L	23.2	0.11	1.4	1.0	22.5	-0.55	1.6	1.4	12	AL
FXUQDW	22.8	22.1	23.3	22.7	22.7	-0.33	1.9	0.5	23.0	-0.07	1.6	0.7	12	LW
G2NAQE	22.3	20.9	22.2	21.7	21.8	-1.11	1.5	0.6	22.5	-0.57	1.6	0.8	12	LZ
GHEAKY	21.3	20.3 *	22.6	22.8	21.8	-1.13	1.8	1.2	21.7	-1.34	1.8	1.1	12	LH
GHEAKY_AL	20.4 *	20.8 L	22.1	22.4	21.4	-1.40	1.5	1.0	21.7	-1.36	1.6	0.7	12	AL
GQRYPY	23.5	24.0	25.2	23.8	24.1	0.84	1.9	0.8	23.6	0.45	1.7	0.8	12	LH
HMQBKW_A	23.6	23.9	23.6	23.5	23.6	0.43	1.6	0.2	23.3	0.21	1.7	0.4	12	XX
HPQN3V_AL	23.6	22.8	23.1	23.6	23.3	0.13	1.9	0.4	23.3	0.15	1.9	0.4	12	AK
J7TPET	22.6	22.0	22.4	22.3	22.3	-0.64	1.9	0.3	22.6	-0.51	1.9	0.3	12	LW
JH8KT8	24.1	23.7	22.9	23.0	23.4	0.27	2.0	0.6	23.4	0.26	1.7	0.4	12	LA
K2Y8EM	21.5	21.8	21.2	22.2	21.7	-1.18	1.6	0.4	21.7	-1.35	1.7	0.5	12	LY
KP4W82	27.3 X	24.8	22.2	23.7	24.5	1.17	1.6	2.2 H	23.9	0.70	1.8	1.9	12	LU
KYRURE	24.2	23.9	24.7	24.0	24.2	0.91	2.0	0.4	23.2	0.11	2.5	1.1	12	LA
LKNNHF	20.3 *	21.1	19.6 X	19.8 X	20.2	-2.40 *	1.6	0.7	20.2	-2.67 *	1.6	1.0	12	LZ



Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E3

TAPPI Official Test Method T826

Report #641

February 2023

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	
LRMFHX	23.1	23.5	24.2	22.0	23.2	0.08	1.8	0.9	23.1	-0.04	1.4	0.9	12	LA
MQPGPG	26.5 *	24.1	23.1	24.1	24.5	1.11	2.1	1.4	24.3	1.07	1.9	1.4	12	LA
MZF2C3	31.7 X	33.6 X	33.3 XH	31.6 X	32.6	7.84 X	2.3	1.0	25.9	2.60 *	1.8	5.0 H	12	LW
N97VXY	18.5 X	23.0	22.0	18.4 X	20.5	-2.20 *	1.9	2.4 H	20.3	-2.62 *	1.6	1.9	12	LZ
N97VXY_AL	34.0 XL	34.5 XL	34.1 XL	33.4 XL	34.0	9.01 X	0.0	0.4	33.5	9.62 X	0.0	2.5 H	12	AL
N9NUZ4	27.0 *H	25.8 *	25.6 *	26.1 *	26.1	2.48 *	2.0	0.6	26.3	2.99 X	2.1	0.7	12	LH
NY4J3	22.7	22.9	22.8	22.5	22.7	-0.32	1.7	0.2	22.6	-0.52	1.7	0.4	12	LA
PUJXG2	24.5 H	23.9	24.5	23.5 L	24.1	0.83	1.9	0.5	23.9	0.76	2.1	1.0	12	LA
QCVRHA_AL	23.7	23.0	22.5	23.4	23.1	0.02	2.0	0.5	22.9	-0.24	2.0	0.7	12	AL
QHP2R9	22.4	22.5	22.9	22.2	22.5	-0.51	1.7	0.3	22.3	-0.77	1.6	0.6	12	LY
QVTMUX	No DATA	22.3	22.6	23.0	22.6	-0.41	1.8	0.4	23.6	0.43	1.8	0.8	10	LU
QVTMUX_AI	No DATA	22.1 L	21.3	20.9 *	21.4	-1.40	1.4	0.6	22.9	-0.21	1.2	1.1	10	AL
R4W2A6	22.8	23.4	24.0	23.2	23.4	0.20	1.5	0.5	23.1	0.00	1.5	0.6	12	LH
RJ9K4P	23.3	23.4	21.7	22.1	22.6	-0.40	1.8	0.9	22.4	-0.67	1.8	0.6	12	LY
RJ9K4P_AL	22.8	23.1	23.0	23.2	23.0	-0.07	1.5	0.2	22.8	-0.30	1.6	0.4	12	AL
T3MCN8	21.7	21.9 L	22.5	22.4	22.1	-0.85	1.5	0.4	22.4	-0.65	1.7	0.6	12	LU
U88V2L	23.2	24.4	23.3	23.8	23.7	0.48	1.7	0.6	23.7	0.57	1.6	0.6	12	LU
UCM4Q7	23.8	23.8	23.6	23.7	23.7	0.51	1.8	0.1 L	23.4	0.29	1.9	0.4	12	LA
V9HXMK_AL	23.2	23.5	23.9	23.5	23.5	0.34	1.9	0.3	23.9	0.71	1.7	0.5	12	AK
VH8LLT	23.2 H	23.0	22.9	23.3 H	23.1	-0.01	2.4	0.2	23.1	0.01	2.2	0.2 L	8	LY
VQEH46_AL	23.3	24.0	24.1 H	24.5 H	24.0	0.72	2.4	0.5	24.2	1.03	2.0	0.5	12	AL
VYVYZ	23.5	24.4 H	24.1	24.0	24.0	0.75	1.9	0.4	24.0	0.83	1.9	0.4	4	ID
WQVWBE	23.2	23.0	23.8	23.2	23.3	0.13	1.8	0.3	22.7	-0.36	1.7	0.6	12	LU
X3NTUR	23.4	21.7	18.8 X	24.0	22.0	-0.95	1.8	2.3 H	22.3	-0.80	2.1	1.9	12	LZ
XEWPKN	25.4	25.4	24.9	25.0	25.2	1.69	1.4	0.3	25.3	1.99 *	1.4	0.3	12	LH
Y6RVCG	22.6	24.8	23.6	24.6	23.9	0.65	1.8	1.0	22.7	-0.39	2.0	1.2	12	LW
YC8QUW	20.1 *	20.9	21.2	21.3	20.9	-1.86	1.6	0.5	20.9	-2.08 *	1.6	0.5	4	XX
ZEWD7J	23.8	23.3	24.0	23.5	23.6	0.43	2.2	0.3	22.7	-0.43	1.9	2.9 H	12	LW
ZXP3GR	21.0 L	21.6 L	21.5 L	21.6 L	21.4	-1.41	0.7	0.3	22.2	-0.85	1.3	0.9	8	LZ

Consensus (All Labs) Results														
Wk Mean	23.16	23.16	23.23	23.20	Month Mean	23.12			Grand Mean	23.12				
Avg SDr	1.74	1.80	1.80	1.71	Avg SD	1.76			Avg SD	1.75				
SD btwn Labs	1.41	1.29	1.15	1.06	SD btwn Labs	1.21			SD btwn Labs	1.08				
Labs Incl	57	62	59	59	SD btwn Wks	0.77			SD btwn Wks	1.10				
Labs Excl	4	2	4	4	Labs Incl	62			Labs Incl	62				
Labs not Rcvd	3	0	1	1										



Containerboard Interlaboratory Testing Program
Analysis 225
STFI, 35 lb Linerboard - 35E3
TAPPI Official Test Method T826

Report #641
February 2023

Key to Instrument Codes Reported by Participants

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



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

Report #641
February 2023

WebCode	Monthly Results				Cumulative Results				Inst
	Mean	CPV	SD		Mean	CPV	SD Months	Months	
23UJ67	151.4	0.42	11.81		152.4	0.71	4.19	4	EV
2P6GQK	166.1	1.13	27.50		163.0	1.35	9.39	4	EV
4QTPYM_AL	142.2	-0.02	20.23		144.9	0.25	3.82	2	AL
68EHBX_AL	133.1	-0.46	20.10		135.4	-0.32	17.20	4	AL
6PVNG2_AL	115.8	-1.29	20.11		119.1	-1.31	5.25	4	AL
8B3247_AL	180.1	1.81	35.01	H	180.1	2.39 *	0.00	1	AL
9FE6U9	131.2	-0.55	12.74		138.8	-0.11	15.21	4	LS
C4T7CT	102.0	-1.95 *	14.56		135.6	-0.31	27.59	4	LA
D24YNQ	131.5	-0.54	7.68	L	139.6	-0.07	6.69	4	EV
DML826_AL	128.0	-0.70	17.15		131.4	-0.57	10.42	4	XX
FXUQDW	134.2	-0.40	23.81		132.4	-0.51	7.78	4	LA
G2NAQE	147.6	0.24	16.83		135.6	-0.31	9.67	4	LS
GHEAKY_AL	131.9	-0.51	9.34		148.1	0.45	13.07	4	AL
K2Y8EM	141.2	-0.06	11.94		143.0	0.14	2.52	L 4	EV
KP4W82	157.8	0.73	16.28		155.1	0.87	13.19	4	EV
LKNNHF	145.1	0.12	8.89		149.5	0.54	15.63	3	LS
LRMFHX	172.6	1.45	18.63		171.7	1.88	11.27	4	LA
MQPGPG	176.5	1.63	21.88		211.0	4.27 X	25.43	4	LA
N97VXY	179.6	1.78	24.24		106.8	-2.06 *	94.27	H 3	LA
N97VXY_AL	151.2	0.42	10.67		139.6	-0.07	10.71	3	AL
N9NUZ4	183.5	1.97 *	27.66		192.1	3.12 X	18.00	4	LS
NYY4J3	117.2	-1.22	15.11		124.0	-1.02	6.96	4	EV
QHP2R9	149.1	0.31	14.64		148.1	0.45	3.24	L 4	EV
QVTMUX_AL	127.5	-0.73	18.50		122.0	-1.14	7.11	3	AL
RJ9K4P	217.6	3.61 X	24.96		169.4	1.74	33.47	4	XX
RJ9K4P_AL	124.7	-0.86	15.14		135.1	-0.34	7.92	4	AL
T3MCN8	141.8	-0.04	14.07		144.6	0.24	3.04	L 4	EV
TXU8XN	123.8	-0.90	11.41		123.8	-1.03	0.00	1	EV
UCM4Q7	140.3	-0.11	16.15		138.1	-0.16	2.18	L 4	LS
V9HXMK	146.7	0.20	18.01		147.7	0.42	4.18	4	EV
VQEH46_AL	122.1	-0.98	8.07		123.3	-1.06	6.04	4	AL
Y6RVCG	123.8	-0.90	11.41		123.6	-1.04	4.83	4	XX

Consensus (All Labs) Results			
Month Mean	142.57	Grand Mean	140.72
Avg SD	17.87	Avg SD Months	21.42
SD btwn Labs	20.78	SD btwn Labs	16.46
Labs Incl	31	Labs Incl	30



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

Report #641
February 2023

Key to Instrument Codes Reported by Participants

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 - 42H2
 TAPPI Official Test Method T538

Report #641
February 2023

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
6PVNG2_AL	373.5	0.22	9.43	371.0	-0.06	2.61	3	AL
C4B3Y2	358.9	-1.05	4.46	353.7	-1.64	5.15	3	PP
DF2DLY	436.2	5.70 X	6.65	431.7	5.46 X	8.06	3	TS
DUH4P8_AL	390.3	1.69	9.09	389.5	1.62	4.41	3	AL
G2NAQE	376.6	0.50	6.43	378.2	0.59	2.47	3	XX
GHEAKY_AL	356.0	-1.31	8.15	373.6	0.17	21.32 H	3	AL
GQRYPY	345.4	-2.23 *	11.23	346.2	-2.32 *	0.73 L	3	HM
HMQBKW_AL	384.9	1.22	7.13	384.1	1.13	0.69 L	3	XX
HPQN3V_AL	364.8	-0.54	7.40	367.2	-0.41	3.33	3	AL
N97VXY_AL	365.0	-0.52	3.97	370.3	-0.13	5.25	3	AL
PUJXG2	379.8	0.77	7.63	383.4	1.07	3.93	3	XX
QCYRHA_AL	378.2	0.63	8.47	377.6	0.53	2.80	3	AL
RJ9K4P_AL	365.6	-0.47	8.37	365.5	-0.56	1.10	3	AL
U88V2L	377.5	0.57	9.38	377.5	0.53	1.95	3	XX
V9HXMK	373.9	0.26	9.01	372.8	0.10	0.98 L	3	LA
V9HXMK_AL	377.2	0.55	11.46	372.2	0.04	4.59	3	AK
VQEH46_AL	367.5	-0.30	6.36	364.4	-0.67	6.49	3	AL

Consensus (All Labs) Results			
Month Mean	370.95	Grand Mean	371.71
Avg SD	8.25	Avg SD Months	6.35
SD btwn Labs	11.44	SD btwn Labs	10.98
Labs Incd	16	Labs Incd	16

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program
 Analysis 231
Internal Bond, 42 Ib Linerboard - 42H
 TAPPI Official Test Method T569

Report #641
February 2023

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
23UJ67	121.2	-0.39	2.77	124.0	-0.39	2.02	4	TM
2P6GQK	127.6	-0.01	6.02	119.2	-0.74	5.76	4	TM
2RR3DG	117.2	-0.62	10.40	124.1	-0.38	4.85	4	XX
4LJEUY	119.3	-0.50	5.05	122.7	-0.48	2.67	4	SC
6TUZHT	125.0	-0.16	8.63	127.2	-0.15	3.71	4	HZ
7MPL9C	114.4	-0.79	9.32	118.8	-0.77	6.21	4	XX
8B3247	84.6	-2.55 *	7.89	84.6	-3.29 X	0.00	1	SC
9FE6U9	134.4	0.40	5.37	136.7	0.56	4.48	4	HY
BW9X3B	156.4	1.70	34.65 H	120.9	-0.61	24.67 H	4	TM
C4B3Y2	148.0	1.20	6.89	144.1	1.10	2.76	4	HY
D24YNQ	140.2	0.74	4.76	140.5	0.83	4.41	4	TM
DML826	107.6	-1.19	5.98	117.1	-0.89	11.40	4	TM
DUH4P8	59.3	-4.05 X	4.61	58.4	-5.23 X	0.83 L	4	LZ
FXUQDW	159.0	1.85	4.90	157.5	2.09 *	11.10	4	HY
HMQBKW	139.0	0.67	5.15	140.9	0.86	3.83	4	HY
HPQN3V	124.5	-0.19	4.19	124.4	-0.36	0.44 L	4	TM
KP4W82	106.2	-1.27	10.23	103.4	-1.90 *	2.17	4	TM
NY4J3	120.6	-0.42	5.22	121.5	-0.57	2.70	4	TM
PUJXG2	117.5	-0.60	6.49	109.4	-1.46	8.09	4	SC
QCYRHA	125.7	-0.12	6.25	125.2	-0.29	0.84 L	3	TM
QHP2R9	138.2	0.62	4.09	142.3	0.97	4.26	4	HZ
RJ9K4P	123.0	-0.28	7.18	126.0	-0.24	5.90	4	TM
RQRNBR	140.0	0.73	13.02	141.6	0.92	4.38	4	TM
U88V2L	148.8	1.25	9.39	149.6	1.51	2.08	4	HY
V9HXMK	115.6	-0.72	4.56	117.2	-0.89	5.75	4	TM
VQEH46	139.2	0.68	6.65	146.5	1.28	8.12	4	TM

Consensus (All Labs) Results			
Month Mean	127.73	Grand Mean	129.18
Avg SD	9.82	Avg SD Months	7.35
SD btwn Labs	16.89	SD btwn Labs	13.53
Labs Incd	25	Labs Incd	24

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	126.66	16.33	1.07	20
Modified Scott Bond Mechanics	153.89	7.23	26.16	2



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

Report #641
February 2023

Analysis Notes

DUH4P8 - Method used is not covered in this test. Data excluded from consensus calculation.

Key to Instrument Codes Reported by Participants

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



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

Report #641
February 2023

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SD	Mean	CPV	SD Months	Months
23UJ67	28.2	-0.02	3.27	27.9	-0.10	1.20	4
2P6GQK	30.6	0.61	1.14	31.7	1.03	0.99	4
68EHBX	23.8	-1.19	1.92	27.3	-0.28	2.69	4
6PVNG2	28.1	-0.06	3.22	29.7	0.43	1.24	4
7ZCQF9	32.0	0.98	1.41	31.1	0.84	1.29	3
8B3247	31.5	0.85	1.00	31.5	0.97	0.00	1
9FE6U9	28.8	0.13	0.84	28.4	0.05	0.34	4
C4B3Y2	35.6	1.93 *	2.19	33.5	1.56	2.68	4
D24YNQ	31.2	0.77	1.92	30.5	0.68	1.14	4
D3BEWG	25.2	-0.82	1.68	25.7	-0.75	1.86	4
DML826	30.4	0.56	4.69	30.9	0.79	1.00	4
DUH4P8	21.4	-1.82	1.56	22.2	-1.75	1.34	4
FXUQDW	28.4	0.03	2.07	26.8	-0.41	1.17	4
G2NAQE	33.5	1.38	1.46	31.9	1.09	1.54	4
HMQBKW	27.6	-0.18	4.04	29.0	0.24	1.56	4
HPQN3V	23.2	-1.35	0.45 L	26.1	-0.63	2.14	4
K2Y8EM	28.0	-0.08	1.46	28.4	0.07	1.00	4
KP4W82	31.6	0.87	2.41	27.8	-0.13	3.03	4
KYRURE	29.3	0.27	2.49	28.0	-0.05	1.49	4
LKNNHF	31.0	0.72	0.71	32.3	1.19	2.02	3
MD4Z36	26.6	-0.45	1.67	25.3	-0.85	0.96	4
MXP2TX	31.6	0.87	3.58	31.2	0.87	1.95	4
N9NUZ4	19.2	-2.40 *	4.15	22.0	-1.83	2.01	4
PUJXG2	26.8	-0.39	1.79	28.1	-0.04	0.84	4
QHP2R9	23.5	-1.27	2.06	19.6	-2.54 *	2.73	4
QVTMUX	36.6	2.20 *	2.51	35.6	2.17 *	3.03	3
RGQ9DZ	27.4	-0.24	2.30	26.1	-0.63	1.15	4
RJ9K4P	23.8	-1.19	2.39	26.4	-0.54	2.21	4
T3MCN8	25.2	-0.82	4.44	26.3	-0.55	1.54	4
U88V2L	26.8	-0.39	2.67	25.1	-0.90	1.42	4
UCM4Q7	27.8	-0.13	0.84	27.6	-0.17	0.37	4
V9HXMK	29.6	0.34	2.70	29.8	0.46	0.53	4
VQEH46	28.4	0.03	4.98	30.7	0.74	2.73	4
Y6RVCG	29.2	0.24	4.21	24.7	-1.03	4.92 H	4



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

Report #641
February 2023

Consensus (All Labs) Results

Month Mean	28.29	Grand Mean	28.19
Avg SD	2.65	Avg SD Months	1.94
SD btwn Labs	3.78	SD btwn Labs	3.41
Labs Incl	34	Labs Incl	34

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Containerboard Interlaboratory Testing Program
Analysis 237

Report #641
February 2023

Air Resistance, 42 lb Linerboard - 42H

TAPPI Official Test Method T460

WebCode	Monthly Results				Cumulative Results				Inst	
	Mean	CPV	SD		Mean	CPV	SD Months	Months		
23UJ67	33.5	0.77	4.24	H	32.3	0.07	2.89	4	GA	
2P6GQK_AL	32.0	-0.19	1.30		32.6	0.32	1.56	4	AL	
4QTPYM_AL	34.0	1.06	1.53		33.4	0.91	0.84	2	AL	
68EHBX_AL	30.9	-0.89	1.17		30.8	-1.17	0.51	4	AL	
6PVNG2_AL	30.4	-1.18	2.07		29.7	-2.07 *	2.05	4	AL	
7UJQ2D	31.5	-0.50	1.46		34.6	1.88	6.71	H	4	LP
7ZCQF9	36.4	2.58 *	2.62		34.6	1.91	1.81	3	GG	
8B3247_AL	33.5	0.74	2.98		33.5	0.98	0.00	1	AL	
8M2MQ4	32.1	-0.11	2.77		31.3	-0.77	0.72	4	GG	
94JV9K	28.8	-2.19 *	2.25		29.6	-2.13 *	1.92	4	XX	
9FE6U9	31.6	-0.40	2.74		31.9	-0.28	0.73	4	LP	
9T44KB	31.7	-0.38	2.37		31.7	-0.43	0.51	4	LP	
C4B3Y2	31.2	-0.69	3.95		32.8	0.45	2.12	4	TP	
C4T7CT	32.0	-0.18	2.17		31.8	-0.40	0.22	L	4	LA
D24YNQ	31.0	-0.82	1.62		30.9	-1.10	0.59	4	LP	
DML826_AL	33.8	0.94	3.24		33.7	1.20	0.77	4	XX	
DUH4P8_AL	32.8	0.32	1.27		32.9	0.50	0.91	4	AL	
FXUQDW	33.7	0.90	1.42		33.1	0.67	1.18	4	LP	
G2NAQE	35.6	2.11 *	3.50		34.2	1.56	1.18	4	GA	
GHEAKY_AL	33.2	0.59	1.68		33.6	1.12	1.08	4	AL	
GQRYPY	28.1	-2.62 *	3.27		28.4	-3.10 X	0.71	4	LA	
HMQBKW	31.8	-0.28	2.94		31.5	-0.59	1.02	4	GG	
HMQBKW_AL	31.9	-0.24	0.92	L	31.4	-0.67	0.53	4	XX	
HPQN3V_AL	33.7	0.87	3.04		32.0	-0.22	2.08	4	AL	
JH8KT8	31.0	-0.84	3.47		31.0	-1.00	0.68	4	LA	
KP4W82_AL	34.0	1.10	2.12		33.2	0.80	0.75	3	AL	
KYRURE	30.1	-1.35	2.18		30.3	-1.60	1.22	4	LA	
LKNNHF	32.1	-0.11	1.66		31.1	-0.91	1.77	3	XX	
LRMFHX	32.4	0.08	1.42		32.2	0.00	2.55	4	LA	
MD4Z36	32.7	0.29	2.10		31.3	-0.75	2.04	4	TD	
MQPGPG	32.1	-0.14	2.26		32.6	0.26	1.46	4	LA	
MXP2TX_AL	32.6	0.20	2.44		25.3	-5.63 X	14.15	H	4	AL
N97VXY_AL	30.4	-1.19	1.75		31.2	-0.85	0.71	3	XX	
N9NUZ4	24.6	-4.86 X	4.10	H	25.8	-5.22 X	1.34	4	TD	
QCYRHA_AL	31.5	-0.47	2.12		32.5	0.18	1.20	3	AL	
QHP2R9	32.2	-0.02	1.32		32.4	0.12	0.91	4	LP	
QVTMUX	34.7	1.55	1.15		33.9	1.34	0.74	3	GG	
QVTMUX_AL	31.6	-0.43	1.78		31.5	-0.63	0.32	3	AL	
RJ9K4P	33.2	0.55	2.71		32.0	-0.17	1.28	4	LP	



Containerboard Interlaboratory Testing Program
Analysis 237

Report #641
February 2023

Air Resistance, 42 lb Linerboard - 42H2

TAPPI Official Test Method T460

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
RJ9K4P_AL	34.3	1.26	2.61	34.9	2.16 *	1.31	4	AL
T3MCN8	32.0	-0.15	3.08	32.1	-0.13	0.78	4	LP
U88V2L	32.2	-0.07	2.53	32.3	0.06	0.49	4	TP
UCM4Q7	32.4	0.08	2.17	32.4	0.09	0.35	4	LP
V9HXMK_AL	33.6	0.83	2.27	32.3	0.00	0.94	4	AK
VQEH46_AL	31.7	-0.34	2.27	31.7	-0.42	1.02	4	AL
Y6RVCG	30.7	-1.03	4.32 H	31.9	-0.28	1.98	4	LP

Consensus (All Labs) Results				
Month Mean	32.28		Grand Mean	32.25
Avg SD	2.46		Avg SD Months	1.67
SD btwn Labs	1.59		SD btwn Labs	1.23
Labs Incd	45		Labs Incd	43

Key to Instrument Codes Reported by Participants

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



Containerboard Interlaboratory Testing Program
 Analysis 240
Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM12
 TAPPI Official Test Method T809

Report #641
February 2023

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	
23UJ67	58.4	54.0	56.1	55.5	56.0	-0.70	3.2	1.8	57.4	-0.38	3.7	2.5	16	LD
2YAJ2J	58.1 L	58.1 L	58.1 L	58.1 L	58.1	0.13	0.3	0.0 L	58.1	-0.05	0.4	0.1 L	16	LD
3BYT66	59.3 L	60.7 L	62.0 L	59.8 L	60.4	1.06	1.1	1.2	60.1	0.84	0.9	1.2	16	XX
3LMLJL	58.1	57.7	58.4	57.7	58.0	0.08	4.8	0.4	58.1	-0.06	5.8	1.3	14	TG
4LJEUY	54.3	50.8 *	51.7 *	52.6	52.3	-2.17 *	3.5	1.5	54.2	-1.78	3.7	2.2	16	LC
68EHBX	61.5	58.5	60.2	56.9	59.2	0.59	4.2	2.0	59.1	0.37	4.4	1.6	16	LZ
6TUZHT	57.0	58.0	57.4	57.3	57.4	-0.13	2.7	0.4	56.8	-0.65	3.0	1.4	16	LD
7UJQ2D	62.3	63.2	59.1	60.0	61.1	1.34	3.0	1.9	57.9	-0.16	3.3	3.1	16	LD
94JV9K	55.5	59.6	54.7	57.4	56.8	-0.39	2.7	2.2	55.4	-1.24	3.3	2.2	16	LD
9FE6U9	No DATA	No DATA	No DATA	59.0	59.0	0.51	2.1	0.0	57.6	-0.29	3.3	1.4	4	LD
9T44KB	57.5	55.3	58.3	60.7	57.9	0.07	3.9	2.2	58.3	0.05	3.4	1.7	16	LD
9ZLGLU	63.6 *	61.3	61.0	61.1	61.7	1.59	4.5	1.3	62.7	1.99 *	4.6	1.5	12	LD
A4BM7A	55.4	56.6	57.5	57.7	56.8	-0.40	2.8	1.0	57.0	-0.54	3.0	1.0	16	EM
AHYKEZ	56.1 L	56.3	56.3	56.0 L	56.2	-0.64	1.6	0.1 L	56.7	-0.67	1.7	0.7	16	MB
B9PBNL	55.5	55.6	58.2	56.4	56.4	-0.54	2.8	1.2	56.1	-0.97	2.9	1.4	12	TH
C4B3Y2	57.2	59.3	56.6	No DATA	57.7	-0.04	3.4	1.4	58.3	0.03	3.3	1.2	12	LD
D3BEWG	64.2 *	61.0	64.5 *	64.6 *	63.6	2.33 *	3.7	1.7	62.3	1.81	3.7	1.6	16	LD
DP7HEF	60.5	60.5 L	61.1 L	58.9 L	60.2	0.99	1.3	0.9	58.9	0.28	2.3	1.5	16	TH
DUH4P8	56.3 L	54.9	56.8 H	55.9	56.0	-0.73	3.8	0.8	56.0	-1.01	2.9	1.5	16	LD
EVCCAW	55.4	55.6	55.6	56.8	55.8	-0.77	2.6	0.7	55.8	-1.07	3.5	0.7	16	LD
FXUQDW	58.4	59.8	59.0	58.6	59.0	0.48	3.4	0.6	59.0	0.33	3.6	0.9	16	XX
G2NAQE	57.2	56.8	55.7	57.9	56.9	-0.35	2.4	0.9	58.5	0.12	3.1	1.8	16	LZ
GQRYPY	52.7	53.0	53.2	52.5	52.9	-1.97 *	3.8	0.3	42.6	-6.98 X	2.9	10.5 H	16	LD
HMQBKW	55.2	57.9	56.0	56.3	56.4	-0.57	3.5	1.1	56.9	-0.57	3.3	1.3	16	LD
K2Y8EM	58.4	58.9	61.8	59.9	59.8	0.80	4.5	1.5	59.0	0.34	4.4	2.1	16	EN
KBL4G9	60.8	61.1	61.4	61.7	61.3	1.40	3.0	0.4	61.8	1.61	3.2	1.6	16	LC
KP4W82	55.0	58.6	58.8	60.8	58.3	0.21	4.2	2.4	58.7	0.21	3.7	1.8	16	LC
KYRURE	54.9	54.6	53.6	53.9	54.2	-1.41	4.3	0.6	54.0	-1.86	4.2	2.4	16	MB
LRMFHX	55.8	57.8	58.6	58.9	57.8	0.01	3.9	1.4	57.7	-0.25	3.7	1.8	16	MB
MD4Z36	55.4	56.1	55.8	54.8 H	55.5	-0.89	4.0	0.6	59.2	0.43	4.6	3.2	16	LZ
MKLGQ9	56.8 H	54.2	62.5	58.0	57.9	0.03	5.0	3.5 H	61.0	1.26	3.8	4.9 H	16	LD
MPVU97	58.2	61.1	59.1 L	59.0	59.3	0.63	2.3	1.2	61.1	1.28	2.7	2.0	8	TB
MQPGPG	61.7	60.2	58.3	60.6	60.2	0.97	4.1	1.4	59.8	0.72	3.7	2.4	16	TU
MZF2C3	54.1 H	56.2	57.7	55.1	55.7	-0.81	4.9	1.5	59.2	0.45	4.2	2.5	16	LD
N97VXY	57.5	56.9	56.8	58.7	57.5	-0.12	4.1	0.9	57.8	-0.19	3.8	1.9	12	LD



Containerboard Interlaboratory Testing Program
Analysis 240

Report #641
February 2023

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

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
NYY4J3	59.7	55.7 L	60.3 L	57.4	58.3	0.20	3.0	2.1	59.3	0.48	3.6	3.0	16	LC
PLLFRQ	64.4 *	61.6	65.1 *H	64.8 *	64.0	2.49 *	4.5	1.6	62.5	1.92	4.0	2.2	16	TX
QHP2R9	55.1	56.3	57.7	55.8	56.2	-0.62	3.0	1.1	56.1	-0.93	3.5	2.0	16	LZ
R4FU6M	58.7	61.9	57.8	57.8	59.1	0.52	4.1	1.9	59.8	0.70	4.0	1.4	16	LD
R4W2A6	61.4	61.6	58.1	57.7	59.7	0.77	4.2	2.1	61.0	1.25	4.4	1.7	12	LD
RJ9K4P	51.0 *	51.8 *	52.5	52.1 *	51.8	-2.38 *	3.9	0.6	52.4	-2.62 *	3.5	1.7	16	LD
RP63PW	54.9	55.5	55.6	54.0	55.0	-1.12	2.6	0.7	55.7	-1.15	2.7	2.4	16	EM
U88V2L	57.2	62.0 H	59.2	59.5	59.5	0.68	4.2	2.0	58.7	0.23	3.6	2.0	16	LC
UCM4Q7	58.3	58.6	58.9	58.2 L	58.5	0.29	1.7	0.3	58.4	0.08	1.7	0.4 L	16	LD
VQEH46	57.4	53.6	55.1	57.1	55.8	-0.79	4.1	1.8	56.4	-0.82	4.0	2.6	16	LD
VYVYXZ	57.9	56.7	54.9	56.6	56.5	-0.50	2.6	1.2	56.7	-0.66	2.3	0.9	8	RS
WQVWBE	58.0	59.4	58.1	57.2	58.2	0.16	3.5	0.9	58.4	0.10	4.4	2.2	16	LD
X3NTUR	57.7	61.1	63.3	56.7	59.7	0.77	3.6	3.1 H	59.4	0.52	3.6	2.4	15	LD
XEWPKN	53.8	54.6	53.9	53.8	54.0	-1.50	3.6	0.4	54.9	-1.47	3.8	1.6	16	LD
Y6RVCG	67.7 X	70.0 X	62.9	62.4	65.8	3.20 X	4.0	3.7 H	62.6	1.95 *	3.5	3.0	16	LD
YC8QUW	57.4 L	57.3 L	57.3 L	57.2 L	57.3	-0.20	0.5	0.1 L	57.2	-0.44	1.7	0.6	16	TU
ZEQ6XW	59.5	59.5	60.0	58.4	59.3	0.62	2.7	0.7	58.9	0.30	2.7	0.5 L	16	LD
ZEWD7J	57.4	58.2	60.7	54.9	57.8	0.00	3.4	2.4	58.6	0.16	3.9	1.9	16	LZ

Consensus (All Labs) Results										
Wk Mean	57.60	57.75	58.13	57.70	Month Mean	57.77		Grand Mean	58.22	
Avg SDr	3.34	3.50	3.43	3.65	Avg SD	3.45		Avg SD	3.51	
SD btwn Labs	2.83	2.86	2.97	2.71	SD btwn Labs	2.50		SD btwn Labs	2.24	
Labs Incl	51	51	52	52	SD btwn Wks	1.47		SD btwn Wks	1.97	
Labs Excl	1	1	0	0	Labs Incl	52		Labs Incl	52	
Labs not Rcvd	1	1	1	1						

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200 Series
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
RS	Regmed Digital Crush Tester CT-2000	TB	TMI Monitor/Compression Tester, 17-70
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TU	TMI Universal Crush Tester (TMI K440)	TX	TMI Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
Analysis 250

Report #641
February 2023

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

TAPPI Official Test Method T843

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	
3BYT66	71.4 L	73.1 L	72.3 L	72.3 L	72.3	1.11	1.0	0.7	71.3	1.06	1.0	1.1	16	XX
68EHBX	65.0	65.4	58.3 *H	64.5	63.3	-1.55	5.2	3.3	64.6	-1.80	4.5	2.5	16	LZ
7UJQ2D	75.0	75.0	75.0	72.2	74.3	1.71	3.9	1.4	71.8	1.30	3.3	2.2	16	LD
9T44KB	67.5	69.3	67.8	69.8	68.6	0.02	2.8	1.1	68.8	-0.01	3.2	1.4	16	LD
AHYKEZ	68.3	65.6 L	70.5 L	72.8	69.3	0.23	1.7	3.1	68.8	-0.01	1.8	1.4	16	MB
C4B3Y2	72.7	70.3	68.5	No DATA	70.5	0.58	3.4	2.1	70.1	0.54	3.9	1.6	12	LD
DP7HEF	63.0 L	63.9	63.6 L	62.8 L	63.3	-1.54	1.5	0.5	63.1	-2.43 *	2.3	1.4	16	TH
DUH4P8	70.2	70.9	70.2	70.4	70.4	0.56	3.2	0.3 L	70.0	0.51	2.9	1.9	16	LD
FXUQDW	69.5	71.6	71.1	71.6	70.9	0.71	3.8	1.0	70.2	0.61	3.7	1.2	16	XX
GQRYPY	57.8 *H	55.9 *H	55.7 *H	56.5 XH	56.5	-3.57 X	8.0	0.9	67.3	-0.63	6.2	14.5 H	16	LD
HMQBKW	71.8	72.4	74.1	73.4	72.9	1.31	4.1	1.1	71.7	1.25	3.8	1.4	16	LD
KP4W82	68.7	65.5 H	68.5	68.4	67.8	-0.23	5.8	1.5	69.2	0.19	5.6	2.2	16	LC
MZF2C3	65.5	67.5 L	71.0	70.0	68.5	-0.01	2.9	2.5	69.2	0.18	2.9	2.9	16	LD
N97VXY	67.0	63.5	66.1	68.2	66.2	-0.69	3.8	2.0	65.8	-1.28	3.9	3.7	12	XX
RJ9K4P	61.8 H	58.0 *	62.1	61.0 *	60.7	-2.32 *	5.9	1.9	57.9	-4.68 X	5.2	4.0	16	LD
U88V2L	73.3	66.1	68.3	66.3	68.5	0.00	3.3	3.4	69.9	0.48	3.3	2.5	16	LC
UCM4Q7	69.2 L	69.0	68.7 L	68.8 L	68.9	0.12	1.6	0.2 L	68.9	0.04	1.7	0.2 L	16	LD
VQEH46	66.3	70.3	72.0	69.0	69.4	0.26	3.5	2.4	70.8	0.85	3.5	2.5	16	LD
Y6RVCG	69.4	70.0	68.8	67.9	69.0	0.14	4.2	0.9	68.4	-0.17	3.8	1.4	16	LD
ZEWD7J	67.1	67.0	70.0	64.8	67.2	-0.39	3.3	2.1	67.2	-0.67	4.1	1.7	16	LZ

Consensus (All Labs) Results									
Wk Mean	68.03	67.52	68.13	68.56	Month Mean	68.53	Grand Mean	68.79	
Avg SDr	3.87	4.37	3.88	3.43	Avg SD	3.66	Avg SD	3.65	
SD btwn Labs	4.14	4.78	4.91	3.54	SD btwn Labs	3.38	SD btwn Labs	2.33	
Labs Includ	20	20	20	18	SD btwn Wks	1.91	SD btwn Wks	3.85	
Labs Exclcd	0	0	0	1	Labs Includ	19	Labs Includ	19	
Labs not Rcvd	0	0	0	1					

Key to Instrument Codes Reported by Participants

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



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

Report #641
February 2023

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	
2YAJ2J	44.7 L	44.7 L	44.6 L	44.5 L	44.6	0.41	0.4	0.1 L	44.8	0.24	0.4	0.2 L	16	LD
6TUZHT	46.2	44.4	43.9	43.9	44.6	0.37	2.7	1.1	44.3	-0.03	2.9	1.1	16	LD
7UJQ2D	44.7	43.3	44.4	44.0	44.1	-0.01	2.6	0.6	44.4	0.02	3.0	1.5	16	LD
94JV9K	46.8	45.6	45.0	45.9	45.8	1.30	3.1	0.8	45.8	0.80	3.1	0.7	16	LD
9T44KB	42.6	40.4	41.2	42.3	41.6	-1.89	3.6	1.0	41.8	-1.41	3.3	1.3	16	LD
9ZLGLU	45.8	44.6	44.7	46.3	45.4	0.96	2.9	0.8	44.9	0.33	3.2	1.6	16	LD
AHYKEZ	44.1	44.4	44.2	44.6	44.3	0.17	1.9	0.2 L	43.0	-0.76	1.7	0.9	16	MB
B9PBNL	35.2 X	35.4 X	34.5 X	36.7 X	35.5	-6.60 X	2.3	0.9	35.5	-4.90 X	2.3	2.0	12	TH
C4B3Y2	46.1	45.8	46.2	44.7	45.7	1.24	3.3	0.7	46.1	0.96	3.4	1.6	13	LD
DP7HEF	44.2	44.2	44.8 L	42.2	43.8	-0.20	1.7	1.1	43.4	-0.54	2.2	1.2	16	TH
DUH4P8	45.1	43.6	45.6	46.2	45.1	0.78	2.2	1.1	44.2	-0.08	2.3	1.0	16	LD
EVCCAW	44.1	44.9	43.8	43.8	44.1	0.03	2.5	0.5	44.9	0.29	2.6	1.2	16	LC
FXUQDW	42.2	43.3	45.9	44.2	43.9	-0.16	4.0	1.6	44.0	-0.20	3.4	1.1	16	XX
G2NAQE	41.0	39.1 *	38.1 *	37.9 X	39.0	-3.87 X	2.3	1.4	41.5	-1.56	2.4	1.9	16	LD
HMQBKW	46.3	46.7	46.0	46.2	46.3	1.70	2.9	0.3	47.5	1.76	3.1	1.5	16	LD
JH8KT8	42.6	42.2	42.3	44.2	42.8	-0.98	3.1	0.9	44.2	-0.10	3.2	1.9	16	LD
KBL4G9	41.4	41.7	42.8	42.3	42.1	-1.57	3.1	0.6	40.7	-2.03 *	2.7	1.6	16	XX
KYRURE	45.9	42.7	43.3	44.9	44.2	0.06	3.6	1.5	47.0	1.50	3.8	4.7 H	16	MB
MKLGQ9	45.2	46.3	44.8	48.3 *	46.1	1.55	3.2	1.6	46.5	1.17	3.8	1.8	16	EM
MPVU97	43.1	41.3	42.3	43.5	42.5	-1.19	3.2	1.0	41.5	-1.57	3.2	1.5	8	XX
N97VXY	41.4	42.3	43.5	41.6	42.2	-1.45	3.3	0.9	41.9	-1.34	4.1	1.1	12	LD
PLFRQ	49.4 *	49.2 *	47.9	48.0 *	48.6	3.47 X	3.3	0.8	47.2	1.59	3.2	3.2	16	LZ
R4FU6M	44.1	43.8 H	41.7	40.0 *	42.4	-1.31	4.8	1.9	43.0	-0.73	4.2	2.3	16	LD
RP63PW	46.1	46.8	38.0 *	41.4 H	43.1	-0.76	4.2	4.1 H	45.5	0.63	3.5	2.6	16	EM
U88V2L	46.8	41.9	45.1	44.2	44.5	0.30	2.7	2.0	45.0	0.35	3.1	2.1	16	LC
WB38CC	42.8	44.7	42.9	42.8	43.3	-0.64	2.8	0.9	44.1	-0.11	3.3	1.3	16	TH
X3NTUR	45.2	44.6	46.4	46.0	45.6	1.11	3.2	0.8	46.2	1.05	3.4	1.8	16	LZ
YC8QUW	44.3 L	44.2 L	44.4 L	44.5 L	44.4	0.20	0.5	0.1 L	44.4	0.02	1.3	0.7	16	TU
ZEQ6XW	44.6	43.9	43.6	44.2	44.1	-0.02	2.5	0.4	43.9	-0.24	2.7	0.4 L	16	LD

Consensus (All Labs) Results														
Wk Mean	44.53	43.95	43.83	44.24	Month Mean	44.10			Grand Mean	44.34				
Avg SDr	2.86	2.97	2.96	3.20	Avg SD	3.00			Avg SD	3.05				
SD btwn Labs	1.93	2.10	2.21	1.93	SD btwn Labs	1.31			SD btwn Labs	1.80				
Labs Incl	28	28	28	27	SD btwn Wks	1.30			SD btwn Wks	1.79				
Labs Excl	1	1	1	2	Labs Incl	26			Labs Incl	28				
Labs not Rcvd	0	0	0	0										



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

Report #641
February 2023

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



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

Report #641
February 2023

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
23UJ67	13.8	14.2	13.5	13.5	13.7	-0.22	1.2	0.3	13.7	-0.50	1.2	0.4	16	LU
2RR3DG	13.6	14.4	13.2 H	13.9	13.8	-0.17	1.9	0.5	14.0	0.16	1.4	0.5	16	LA
3BYT66	12.1 X	12.7	12.4 *	12.7 *	12.5	-2.05 *	0.8	0.3	13.6	-0.70	0.9	0.8	16	XX
3LMLJL	14.3	13.6	13.8	13.9	13.9	-0.04	1.1	0.3	13.6	-0.53	1.1	0.5	14	TX
3Y6JFA	13.3 H	13.3	12.5 *	13.3 H	13.1	-1.17	1.5	0.4	13.5	-0.81	1.4	0.5	12	LA
8CEQHC	14.0	13.4	14.0	No DATA	13.8	-0.14	1.0	0.4	13.9	-0.01	0.9	0.3	7	LA
9FE6U9	No DATA	No DATA	No DATA	13.8	13.8	-0.08	0.8	0.0	13.6	-0.67	0.8	0.4	2	LH
9ZLGLU	14.3	14.3	14.3 L	14.4	14.3	0.62	0.9	0.1 L	14.4	0.96	1.1	0.4	16	XX
A4BM7A	13.1	13.4	13.6	13.5	13.4	-0.70	0.9	0.2	13.4	-1.02	0.9	0.3	16	LH
C4B3Y2	13.8	13.2	14.1	13.0	13.5	-0.52	1.0	0.5	13.6	-0.54	1.1	0.4	14	LB
CAGVQB	14.4	14.6	14.7	14.5	14.5	0.91	1.1	0.1	15.7	3.68 X	0.9	3.0 H	12	XX
D3BEWG	14.5 L	14.2 L	14.5 L	14.4 L	14.4	0.74	0.4	0.1	14.4	1.06	0.6	0.3	16	LH
DP7HEF	12.7 *L	12.9 L	13.1 L	13.1 L	13.0	-1.35	0.5	0.2	12.9	-2.02 *	0.9	0.4	16	LZ
DUH4P8	14.1	13.3 L	14.2 L	13.9	13.9	0.00	0.8	0.4	13.8	-0.13	0.9	0.6	16	LA
EVCCAW	14.4	15.6 *	14.9	14.4 H	14.8	1.34	1.3	0.6	14.3	0.84	1.1	0.6	16	LH
G2NAQE	13.4	11.9 *	12.3 *	13.2	12.7	-1.70	1.0	0.7	13.5	-0.80	1.1	0.6	16	LZ
HPQN3V	14.3	14.2	14.6	14.4	14.4	0.75	1.0	0.2	14.6	1.37	1.1	0.4	16	LA
JH8KT8	14.6	14.8	13.5	14.9	14.4	0.81	1.1	0.6	14.7	1.63	1.1	0.7	16	LH
KYRURE	13.7	14.8 H	14.3 H	14.3	14.3	0.56	1.6	0.5	14.2	0.56	2.8	0.9	16	LA
LRMFHX	22.7 XH	14.1	14.1	14.5	16.3	3.56 X	1.5	4.2 H	14.6	1.38	1.4	2.3 H	16	LA
MQPGPG	16.2 XH	14.6 L	15.2 L	15.2 *L	15.3	2.04 *	1.1	0.7	13.5	-0.78	1.5	2.9 H	16	LA
N97VXY	10.9 X	14.0	14.1	11.6 X	12.7	-1.78	0.9	1.6 H	12.9	-1.97 *	1.0	1.0	12	LZ
RJ9K4P	13.9	14.1	13.6 H	14.0	13.9	-0.02	1.4	0.2	13.7	-0.48	1.2	0.3	16	LB
U88V2L	14.5	14.1	14.2	14.5	14.3	0.62	1.0	0.2	14.2	0.54	1.1	0.3	16	LU
UCM4Q7	14.5	14.4	14.6	14.3	14.5	0.82	1.1	0.1	14.4	0.92	1.1	0.2 L	16	LA
VQEH46	13.9	13.8	14.1	14.2	14.0	0.16	1.2	0.2	14.1	0.40	1.2	0.5	16	LA
VYVYZ	13.9	14.7	13.8	14.6	14.3	0.54	1.1	0.5	14.5	1.13	1.1	0.4	8	XX

Consensus (All Labs) Results														
Wk Mean	13.95	13.94	13.89	14.01	Month Mean	13.89			Grand Mean	13.91				
Avg SDr	1.02	1.07	1.24	1.05	Avg SD	1.10			Avg SD	1.22				
SD btwn Labs	0.51	0.79	0.74	0.62	SD btwn Labs	0.69			SD btwn Labs	0.49				
Labs Incl	22	26	26	25	SD btwn Wks	0.51			SD btwn Wks	0.89				
Labs Excl	4	0	0	1	Labs Incl	26			Labs Incl	26				
Labs not Rcvd	1	1	1	1										



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

Report #641
February 2023

Key to Instrument Codes Reported by Participants

LA	L&W Autoline	LB	L&W Model 152
LH	L&W 282	LU	L&W 52 without moisture correction (was 53)
LZ	L&W (model not specified)	TX	TMI (model not specified)
XX	Instrument make/model not specified by lab		

End of Report