Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #579 (N) - December 2017

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX11	Box Compression Strength, Corrugated Boxes
202	EC10	Edgewise Compressive Strength, Wax (T811), Corrugated Board
203	EC10	Edgewise Compressive Strength by Clamp (T839), Corrugated Board
205	42D3	Mullen Burst of Linerboard, 42 lb Linerboard
207	35E1	Mullen Burst of Linerboard, 35 lb Linerboard
215	42D3	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
217	35E1	Ring Crush of Linerboard, Rigid Platen Type, 35 lb Linerboard
223	42D3	STFI of Linerboard, 42 lb Linerboard
225	35E1	STFI of Linerboard, 35 lb Linerboard
228	56A	Roughness - Stylus Method, 56 lb Linerboard
229	42D3	Roughness - Sheffield Method, 42 lb Linerboard
231	42D	Internal Bond Strength, Linerboard, 42 lb Linerboard
234	56A	Coefficient of Static Friction - Inclined Plane, 56 lb Linerboard
237	42D	Air Resistance - Gurley Method, Linerboard, 42 lb Linerboard
240	CM91	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM91	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM91	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM91	STFI of Medium, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

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

For these tests samples of linerboard and corrugating medium, that each have been separately randomized from narrow rolls, are distributed for testing weekly. One weight of medium (26 lb.) is used for Concora Flat Crush Strength, Corrugated Fluted Crush Strength, Ring Crush Strength, and STFI Compression. Two weights of linerboard are tested each month for Mullen Burst, Ring Crush, and STFI Compression: 42 lb. - every month; 36 lb. and 56 lb. - alternate months. The participants return their test results for analysis and receive a monthly report.

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

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

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

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM91	October 2016-Current
	CM81	October 2015-September 2016
35 lb Linerboard	35E1	June 2017-Current
42 lb Linerboard	42D3	November 2017-Current
	42D2	August 2016-October 2017
56 lb Linerboard	56A1	July 2016-Current

ABOUT CTS

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

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EXPLANATION OF TABLES

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

Definitions of Terms Used

Weekly Results

Laboratory Data

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

Consensus Data

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

Monthly Results

Laboratory Data

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

Consensus Data

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

Cumulative Results

Laboratory Data

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

Consensus Data

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

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

Flag	Explanation

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 variabilty between weekly means (high week-to-week variation).
L	Indicates low variabilty between weekly means (low week-to-week variation).

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
67CFXU	822.2	0.99	107.01	H	749.0	-0.27	49.13	4	LS
8MQL7W	739.8	-0.35	17.71		753.3	-0.18	9.76 L	4	LG
8UUTLY	746.6	-0.24	43.26		751.4	-0.22	36.61	4	ER
924JHA	683.4	-1.27	11.22	L	679.4	-1.71	11.75	4	TB
9EV46T	687.9	-1.19	25.64		782.3	0.42	133.74 H	4	LM
CK79M4	767.4	0.10	11.39	L	767.4	0.11	0.00	1	ET
FFMAPQ	818.0	0.92	106.68	H	785.0	0.47	45.34	4	ES
H6UX4N	770.1	0.14	88.94		712.4	-1.03	57.02	4	ER
HWVHBA	715.7	-0.74	32.74		760.0	-0.05	41.28	4	LM
HXQ2AQ	692.4	-1.12	15.69		675.8	-1.78	12.22	4	LL
JGMPKL	861.4	1.62	40.11		858.0	1.98 *	84.59	4	LG
JRKM7Z	835.5	1.20	20.02		767.8	0.12	74.72	4	LH
LULAXV	713.3	-0.78	41.69		760.9	-0.03	41.41	3	LL
MZHLAH	792.9	0.51	36.12		733.8	-0.58	58.34	4	LG
NN6N3U	760.0	-0.02	22.47		731.2	-0.64	19.59	4	TE
NVTBXY	774.8	0.22	10.58	L	749.5	-0.26	50.96	4	ET
PA6AF6	866.2	1.70	30.87		843.8	1.68	47.04	4	ER
PXPEZ7	1,010.5	4.05 X	73.45		840.5	1.61	120.52	4	LG
Q7ZXYV	671.0	-1.47	36.55		710.8	-1.06	30.45	4	LS
WBTBZK	817.6	0.91	29.31		795.6	0.69	20.19	3	LS
WVZHDY	693.3	-1.11	111.00	H	797.4	0.73	94.22	3	EX

Consensus (All Labs) Results

Month Mean	761.48	Grand Mean	762.15
Avg SD	53.05	Avg SD Months	61.98
SD btwn Labs	61.54	SD btwn Labs	48.51
Labs Incld	20	Labs Incld	21

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	758.94	57.27	2.54	4
Clip sealing	762.12	64.34	0.64	16

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		

Containerboard Interlaboratory Testing Program

Analysis 202

Edgewise Compressive Strength, by T811, Corrugated Board - EC10

TAPPI Official Test Method T811

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4KT723	40.0	0.74	1.05		40.1	1.08	0.14	2	TD
67CFXU	40.7	0.96	1.25		38.4	0.57	1.55	4	LC
8DLLPH	34.5	-0.99	2.09		33.2	-1.07	1.26	4	XX
8MQL7W	40.6	0.92	2.12		40.4	1.19	0.34	4	LE
AB9QXA	40.1	0.77	1.46		39.4	0.87	1.21	4	LC
H6UX4N	35.9	-0.54	3.54	H	34.6	-0.65	1.23	4	EN
Q7ZXYV	37.5	-0.03	2.95		36.6	0.01	1.07	4	EM
VTEE62	31.4	-1.95 *	1.24		31.4	-1.62	0.76	4	WK
WBTBZK	38.0	0.12	2.02		35.4	-0.39	2.79 H	3	EM

Consensus (All Labs) Results

Month Mean	37.65	Grand Mean	36.63
Avg SD	2.12	Avg SD Months	1.36
SD btwn Labs	3.19	SD btwn Labs	3.20
Labs Incld	9	Labs Incld	9

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LE	L&W Crush Tester 840
TD	TMI Digital Crush Tester, Model 17-09	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2EWDCQ	41.4	-0.10	0.90		41.5	0.37	0.89	4	LD
2KKDC4	39.5	-0.71	1.76		39.7	-0.63	0.57	4	LD
4KT723	41.8	0.03	0.63	L	40.3	-0.30	1.28	4	TD
67CFXU	42.0	0.10	1.35		42.1	0.70	1.01	4	LC
69HZLU	40.5	-0.39	1.82		41.3	0.25	0.70	4	LD
8EHYCA	39.8	-0.60	1.69		38.9	-1.08	0.84	4	TB
8MQL7W	39.8	-0.59	2.18		40.4	-0.26	0.77	4	LY
8UUTLY	37.8	-1.23	1.39		38.5	-1.33	0.44	4	LD
924JHA	48.1	2.04 *	1.54		47.8	3.85 X	3.24	4	LD
9EV46T	41.0	-0.23	1.60		41.9	0.55	1.33	4	EM
AB9QXA	48.0	2.01 *	1.51		43.1	1.24	3.43	4	LC
BDAGEA	41.9	0.05	1.23		41.4	0.29	0.61	4	EM
CK79M4	47.2	1.75	1.22		47.2	3.52 X	0.00	1	EM
CUCDBD	41.9	0.05	2.67	H	41.9	0.60	0.87	4	TD
ERH9TQ	37.9	-1.19	1.00		39.1	-0.99	2.03	4	LD
F3XHWA	42.5	0.27	2.57		42.1	0.67	0.65	2	LC
FFMAPQ	40.3	-0.45	1.45		39.4	-0.81	1.14	4	LD
FGDJTZ	38.0	-1.17	1.20		39.5	-0.75	1.49	4	LC
H388DR	42.1	0.14	1.37		40.4	-0.26	1.74	4	TD
H6UX4N	38.6	-0.99	1.41		38.0	-1.59	0.51	4	EN
HCVZKH	46.7	1.57	1.13		44.7	2.11 *	2.06	4	TG
HWVHBA	43.0	0.42	1.24		44.8	2.18 *	2.07	4	TG
HXQ2AQ	40.9	-0.26	1.17		40.1	-0.40	1.11	4	LC
JGMPKL	39.3	-0.76	1.19		40.3	-0.32	1.75	4	MK
JRKM7Z	46.7	1.58	1.76		43.0	1.20	3.84 H	4	EM
LULAXV	40.2	-0.49	1.09		41.3	0.21	1.54	3	BU
MPJVNB	43.0	0.41	2.14		42.8	1.09	2.62	4	CT
MZHLAH	41.5	-0.06	1.51		40.6	-0.13	0.95	4	TJ
N6UVVL	43.0	0.40	1.93		39.9	-0.54	4.00 H	3	IM
NN6N3U	42.8	0.34	1.28		42.5	0.89	0.21 L	4	LD
NVTBXY	43.7	0.63	1.82		42.1	0.71	1.95	4	TD
PA6AF6	38.9	-0.88	1.41		39.1	-0.98	0.38	4	EM
PGJD4J	50.1	2.66 *	1.95		48.4	4.16 X	1.15	4	LD
PVMGQY	41.7	0.00	0.93		41.2	0.17	0.35	4	LD
PXPEZ7	41.7	-0.01	2.90	H	40.3	-0.31	0.98	4	EM
Q7ZXYV	41.1	-0.18	1.80		41.9	0.57	1.27	4	EM
QZBJAN	36.2	-1.75	0.89		32.9	-4.41 X	4.61	2	KS
RCZ2YD	37.3	-1.41	2.45		38.0	-1.62	3.75 H	4	LC
UD4EV7	40.6	-0.35	2.74	H	40.2	-0.37	0.41	4	TD

	Monthly Results				Cumulative Results					
WebCode	Mean	CPV	SD		Mean	CPV	SD Months		Months	Inst
UMB7A8	39.0	-0.85	1.88		39.0	-1.06	0.10	L	4	LD
VTEE62	36.8	-1.55	0.68	L	36.6	-2.39 *	0.24	L	4	WK
WBTBZK	45.3	1.14	0.95		41.3	0.26	3.41		3	EM
WVZHDY	43.6	0.61	0.99		43.5	1.48	0.26	L	4	TL
Z4LLAQ	41.7	-0.01	1.31		41.9	0.55	4.46	H	4	TK

Consensus (All Labs) Results

Month Mean	41.69	Grand Mean	40.87
Avg SD	1.63	Avg SD Months	1.86
SD btwn Labs	3.15	SD btwn Labs	1.80
Labs Incld	44	Labs Incld	40

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
IM	Instron 5500 Series	KS	Kyungsung KSU-05M
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LY	L&W 830	MK	Mark-10 ESM303
TB	TMI Monitor/Compression Tester, Model 17-70	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Digital Crush Tester, 17-76	TJ	TLS Compression Tester, Model CDM-5
TK	TLS Compression Tester, Model 5184	TL	Tech-Lab Systems Compression
WK	Zwick Z005 Crush Tester		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2EWDCQ	113.5	108.5	112.5	117.0	112.9	1.21	9.6	3.5	112.4	0.89	10.6	3.2	8	AH
2XAAD3	113.0	112.5	107.7	107.1	110.1	0.31	11.9	3.1	109.8	0.10	11.7	2.8	8	TB
3NYC34	106.7	108.5	111.2	107.2	108.4	-0.23	10.3	2.0	107.5	-0.65	10.2	2.5	8	XX
3VJF7Z	109.0	108.9	108.5	108.0	108.6	-0.17	9.6	0.4 L	109.0	-0.15	9.1	0.6 L	8	LA
42K686	112.5	104.6	110.1	105.6	108.2	-0.31	10.6	3.7	107.5	-0.62	10.1	3.1	8	LC
67CFXU	106.3	105.1	100.9 *	103.7	104.0	-1.66	9.8	2.3	105.2	-1.36	9.9	2.8	8	AH
69HZLU	105.6	115.6	108.7	113.1	110.8	0.52	11.9	4.5	110.1	0.19	12.1	4.5	8	AA
6WMPDM	102.8	105.1	100.6 *	102.6	102.8	-2.05 *	11.8	1.8	106.6	-0.91	13.1	4.7	8	LZ
8JMXHT	105.5	101.5	102.8 L	107.1	104.2	-1.58	8.9	2.6	106.1	-1.09	10.8	2.7	8	LA
8MQL7W	114.4	114.3	115.8	No Data	114.8	1.84	11.3	0.8	114.4	1.52	11.1	1.1	7	LZ
8UUTLY	103.7	102.9	105.2	110.6	105.6	-1.14	11.7	3.5	108.1	-0.46	12.0	4.0	8	AH
8VMG4U	104.6 H	104.3	109.6	102.5	105.3	-1.25	14.6	3.0	108.2	-0.41	14.4	4.4	8	LA
9CK7RB	107.7	107.1 L	110.0	105.5	107.6	-0.50	6.6	1.8	107.7	-0.58	7.5	3.2	8	AH
9FJM3J	109.6	108.3	111.6	110.2	109.9	0.26	11.1	1.4	112.8	1.02	11.2	3.7	8	LA
9KG3CT	102.4	110.4	109.3	107.1	107.3	-0.59	14.0	3.5	107.6	-0.61	13.0	3.1	8	LC
9WRD6P	114.0 L	110.9 L	109.2 L	109.8 L	111.0	0.60	3.4	2.1	111.6	0.65	3.6	2.0	8	XX
ARXULQ	115.3	116.0 *	116.5	112.7	115.1	1.94 *	13.2	1.7	113.8	1.33	12.3	3.4	8	LZ
B2D8W8	108.1	111.1	109.1	110.9 L	109.8	0.22	6.1	1.4	103.8	-1.78	7.2	6.6	8	AH
ERH9TQ	104.5	109.0	106.2	109.9	107.4	-0.56	10.9	2.5	106.6	-0.93	10.1	3.6	8	LC
F49DKM	111.8	112.1	114.1	113.8	112.9	1.23	9.8	1.2	112.2	0.83	10.2	1.3	8	LC
FFMAPQ	105.7	108.0	103.1	101.3	104.5	-1.49	10.4	2.9	104.6	-1.54	11.0	2.2	8	LA
HFYN9K	105.2	110.3	109.4	112.0	109.2	0.03	8.1	2.9	110.3	0.23	8.1	3.2	8	TB
KNX6RL	106.9	106.5	113.0	118.4	111.2	0.67	13.9	5.6	114.7	1.60	12.7	7.0	8	LA
KTR8RF	107.3	112.5	115.9	112.4	112.0	0.93	12.3	3.6	109.7	0.05	12.1	3.7	8	LC
KU7QEX	113.7	103.4	118.6 *	113.8	112.3	1.04	12.3	6.4	112.6	0.95	10.9	4.8	8	LC
L7V6YC	99.8 *	107.7 L	106.6	107.1	105.3	-1.23	8.7	3.7	105.9	-1.12	10.1	2.8	8	LA
LL6VT6	109.5	109.7	110.0	109.7	109.7	0.20	7.8	0.2 L	109.1	-0.13	8.5	0.7 L	8	LJ
LXM9FF	111.6	103.5	114.7	117.9	111.9	0.91	10.3	6.1	112.6	0.97	10.9	4.9	8	AX
MPJVNB	114.1	115.1	113.1 H	113.0	113.8	1.52	16.2	1.0	114.2	1.46	14.2	4.5	8	XX
P8X2WC	111.8	112.0	108.8	105.2	109.4	0.10	12.5	3.2	109.2	-0.09	11.8	2.8	8	LB
PPW7EE	106.4	103.7	104.3	102.2	104.1	-1.61	11.9	1.8	105.6	-1.22	12.5	3.7	8	LC
PVMGQY	112.2	113.5	111.7	112.0	112.3	1.04	10.7	0.8	112.8	1.01	10.2	1.0 L	8	LA
PX9D2A	115.8	113.1	112.0	109.1	112.5	1.09	13.0	2.8	110.7	0.37	13.7	3.8	8	TB
Q7ZXYV	104.3	103.5	107.5	111.6	106.7	-0.77	11.7	3.7	106.7	-0.88	11.4	3.4	8	LA
QB8N22	112.1	107.0	106.6	108.3	108.5	-0.21	10.1	2.5	110.1	0.19	10.7	3.8	8	LC

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D3

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
R6MNJ4	109.5 L	108.6 L	109.2 L	109.6	109.2	0.04	4.2	0.5 L	109.7	0.04	5.1	3.3	8	LA
RCZ2YD	111.2	106.9	109.4	111.5	109.8	0.20	10.3	2.1	111.3	0.55	11.1	2.4	8	LA
RF6K98	98.9 *	120.6 X	114.9	121.1 *	113.9	1.53	6.6	10.4 H	113.9	1.36	6.6	10.4 H	4	LC
RGR46Y	107.5	115.4	108.1	111.5	110.6	0.48	9.9	3.6	112.5	0.93	8.8	3.2	8	LA
RJHAMA	111.7	109.6	112.4	111.5	111.3	0.70	11.3	1.2	110.1	0.19	11.6	1.7	8	LA
RLQHTN	105.0 L	106.8 L	107.2 L	104.4 L	105.9	-1.06	3.8	1.4	105.8	-1.17	5.3	1.6	8	RE
TMXZNY	104.4	108.7	115.6	100.8	107.4	-0.57	10.6	6.4	106.7	-0.90	8.7	5.1	8	LJ
UMB7A8	106.2	105.4	111.5	108.5	107.9	-0.40	10.6	2.7	106.6	-0.91	8.8	2.3	8	LA
UPNEWA	102.5	102.6	109.5	107.6	105.6	-1.16	11.5	3.6	105.9	-1.12	10.4	3.3	8	LC
V29GAX	114.0	104.7	111.4 H	106.9	109.3	0.04	14.2	4.2	109.0	-0.16	13.2	3.8	8	LZ
VNKHGA	113.9	110.0	109.6	105.7	109.8	0.21	10.6	3.3	110.9	0.44	11.9	2.9	8	LA
W96R29	110.2	106.4	105.6	108.7	107.7	-0.45	8.9	2.1	106.7	-0.90	9.8	2.9	8	LC
WM8283	116.0	121.0 X	123.5 X	121.5 *	120.5	3.66 X	11.6	3.2	118.0	2.63	*11.8	4.8	7	LA
X2NFN8	120.8*H	113.1	116.7	107.7	114.6	1.76	15.2	5.6	115.9	2.00	*14.1	4.8	8	AH
X7EWU7	102.7	104.3	106.0	104.5	104.4	-1.54	9.7	1.4	105.0	-1.40	9.8	1.3	8	LC
XH6NGV	105.6	108.8	110.7	112.2	109.3	0.07	9.2	2.8	109.7	0.07	10.5	2.7	8	LA
ZFTVC8	110.2	107.6	108.1	108.4	108.6	-0.18	11.7	1.1	108.5	-0.33	11.6	1.6	8	LC
ZQC8Q6	107.6	107.6	112.2	109.0	109.1	0.00	13.3	2.2	109.0	-0.17	12.1	3.4	8	LC

Consensus (All Labs) Results

Wk Mean	108.78	108.48	109.86	109.42	Month Mean	109.13	Grand Mean	109.53
Avg SDr	10.83	10.73	10.97	11.09	Avg SD	10.87	Avg SD	10.80
SD btwn Labs	4.62	3.78	3.98	4.63	SD btwn Labs	3.10	SD btwn Labs	3.20
Labs Incld	53	51	52	52	SD btwn Wks	3.39	SD btwn Wks	3.72
Labs Excld	0	2	1	0	Labs Incld	52	Labs Incld	53
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

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

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2EWDCQ	91.0	96.0	90.5	91.5	92.3	0.01	8.2	2.5	95.0	1.04	8.0	5.7	12	AH
2XAAD3	99.1	93.0	91.0	92.2	93.8	0.53	7.7	3.6	91.9	-0.11	8.8	3.3	12	TB
3NYC34	87.7	84.9 *	94.2 L	94.1	90.2	-0.67	8.1	4.7	92.4	0.05	8.4	3.9	12	XX
3VJF7Z	89.9	90.5	91.5	92.2	91.0	-0.39	9.8	1.0	91.6	-0.25	9.2	0.8 L	12	LA
42K686	95.9	95.3	92.3	97.4	95.2	0.99	6.1	2.2	92.0	-0.09	6.3	3.2	12	LC
67CFXU	90.3	84.7 *	81.3 X	85.7	85.5	-2.23 *	8.7	3.7	88.2	-1.53	8.4	3.5	12	AH
69HZLU	92.1	91.9	94.5	93.6	93.0	0.26	8.2	1.2	94.1	0.71	9.1	3.1	12	AA
6WMPDM	87.1	86.4	87.7	87.3	87.1	-1.69	7.0	0.5	87.2	-1.92	8.3	1.6	12	LA
8JMXHT	84.0	88.4	88.3	87.0	86.9	-1.76	7.8	2.1	89.1	-1.20	7.4	2.8	12	LA
8MQL7W	92.0	93.9	89.3	NO DATA	91.7	-0.17	9.8	2.3	93.7	0.55	9.9	2.8	10	LZ
8UUTLY	94.3	85.7	91.6	88.8	90.1	-0.71	7.8	3.7	88.6	-1.36	7.1	3.7	12	AH
8VMG4U	88.8	90.2	89.5	89.1	89.4	-0.94	9.8	0.6	91.2	-0.38	8.0	3.6	12	LA
9CK7RB	86.4	92.1	89.9	89.6	89.5	-0.91	7.9	2.4	90.3	-0.73	7.3	2.9	12	AH
9FJM3J	94.4	94.4	98.8 *	93.2	95.2	0.99	10.1	2.4	94.6	0.89	9.3	2.7	12	LA
9KG3CT	93.9	89.6	91.6	93.6	92.2	-0.02	7.3	2.0	90.0	-0.85	8.4	3.6	12	LC
9WRD6P	89.1	91.3	93.9 L	97.2	92.9	0.21	4.5	3.5	93.0	0.30	4.2	2.7	12	XX
ARXULQ	103.3 *	94.6	96.4	95.5	97.4	1.72	9.0	4.0	95.5	1.25	8.7	2.9	12	LZ
B2D8W8	89.3	89.2	90.7	90.6	90.0	-0.76	4.7	0.8	89.6	-0.99	4.6	0.9	12	AH
ERH9TQ	86.8	90.3	88.8	87.0	88.2	-1.33	9.9	1.7	89.6	-0.98	8.7	3.2	12	LC
F49DKM	97.4	96.5	96.3	93.1	95.8	1.19	8.4	1.9	96.5	1.62	9.0	2.0	12	LC
FFMAPQ	88.7	92.7	87.3	93.5	90.6	-0.56	7.8	3.0	90.1	-0.81	8.1	2.8	12	LA
HFYN9K	103.4 *	96.7	97.7	102.8 X	100.1	2.62 *	7.9	3.4	99.0	2.58 *	8.5	3.0	12	TB
KNX6RL	94.6	89.3	98.7 *	98.7 H	95.3	1.02	10.5	4.5	93.9	0.62	9.0	4.2	12	XX
KTR8RF	90.3	96.9	94.0	90.1	92.8	0.20	7.2	3.3	91.1	-0.42	8.0	3.5	12	LC
KU7QEX	93.1	87.9	95.4	91.5	92.0	-0.09	8.3	3.2	91.7	-0.20	7.1	3.7	12	LC
L7V6YC	90.5	89.3	90.4	88.9	89.8	-0.82	6.3	0.8	90.1	-0.82	7.5	2.6	12	LA
LL6VT6	92.0	91.8	92.2	92.1	92.0	-0.07	6.3	0.1 L	91.7	-0.21	6.7	0.3 L	12	LJ
LXM9FF	92.2	92.1	95.3	91.4	92.7	0.17	8.3	1.7	93.6	0.51	8.6	2.5	12	AX
MPJVNB	95.1	95.5	93.2	96.6	95.1	0.95	8.2	1.4	95.7	1.32	9.2	2.0	12	XX
P8X2WC	88.8	89.9	88.7	90.6	89.5	-0.91	6.7	0.9	88.9	-1.26	7.5	1.3	12	LB
PPW7EE	87.8 L	95.3	90.5	86.1	89.9	-0.77	7.9	4.0	89.6	-1.00	8.4	3.3	12	LC
PVMGQY	94.8	93.6	94.2	93.1	93.9	0.56	6.0	0.7	92.5	0.09	6.6	1.4	12	LA
PX9D2A	93.4	94.1	95.1	98.0	95.1	0.97	8.1	2.0	93.6	0.52	8.5	3.1	12	TB
Q7ZXYV	89.0	90.2	93.6	96.0	92.2	-0.01	8.7	3.2	92.6	0.12	9.2	3.3	12	LA
R6MNJ4	92.6	92.0	92.5 L	92.6	92.4	0.07	4.2	0.3 L	91.7	-0.21	4.7	0.8 L	12	LA

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

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
RCZ2YD	87.8	94.2	94.2	97.2	93.4	0.37	9.4	4.0	93.1	0.34	8.9	2.6	12	LA
RF6K98	90.5	95.8	95.5	91.6	93.4	0.37	6.3	2.7	93.4	0.43	6.3	2.7	4	LC
RGR46Y	87.5	92.7	91.1	96.2	91.9	-0.12	7.7	3.6	93.0	0.31	8.0	3.1	12	LJ
RJHAMA	92.1	92.6	95.2	95.0	93.7	0.49	6.2	1.6	91.7	-0.20	7.6	2.3	12	LA
RLQHTN	97.6 L	97.8 L	96.8	97.4 L	97.4	1.71	3.4	0.4 L	95.5	1.22	4.6	2.3	12	RE
TMXZNY	90.2	93.7	94.5	83.7 *	90.5	-0.57	7.3	4.9	92.8	0.23	7.8	5.7	12	LJ
UMB7A8	87.3	87.2	84.3 *	85.9	86.2	-2.02 *	6.8	1.4	86.5	-2.15 *	5.8	2.4	12	LA
UPNEWA	102.5 *	89.0	86.8	91.9	92.6	0.11	7.8	7.0 H	91.5	-0.26	7.3	6.0	12	LA
V29GAX	95.7	92.0	91.3	92.7	92.9	0.23	7.6	1.9	92.9	0.25	8.2	2.0	8	LZ
VNKHGA	93.1	91.2	94.3	88.0	91.7	-0.19	8.9	2.8	93.4	0.45	9.0	3.3	12	LA
W96R29	89.6	98.7	92.3	88.8	92.4	0.04	8.5	4.5	91.7	-0.20	8.2	3.8	12	LC
WM8283	98.1	101.0 *H	94.9	103.8 X	99.4	2.39 *	11.0	3.8	99.2	2.64 *	8.6	2.7	12	LA
X2NFN8	96.5	97.7	94.8	90.7	94.9	0.89	8.3	3.1	96.1	1.48	9.1	3.0	12	AH
X7EWU7	86.5	90.4	91.4	92.7	90.2	-0.66	7.0	2.7	89.7	-0.96	7.0	2.6	12	LA
XH6NGV	89.1	90.9	88.9	93.0	90.5	-0.58	8.9	1.9	90.3	-0.72	8.7	9.0 H	12	LA
ZFTVC8	91.8	94.0	94.8	93.1	93.4	0.40	6.9	1.3	92.0	-0.09	8.2	2.6	12	LC
ZQC8Q6	90.7	91.5	92.7	87.9	90.7	-0.51	8.0	2.0	93.2	0.38	9.3	3.4	12	LC

Consensus (All Labs) Results

Wk Mean	92.03	92.24	92.53	91.91	Month Mean	92.23	Grand Mean	92.22
Avg SDr	7.97	7.82	7.38	8.41	Avg SD	7.90	Avg SD	7.98
SD btwn Labs	4.37	3.55	3.14	3.62	SD btwn Labs	3.01	SD btwn Labs	2.64
Labs Incld	52	52	51	49	SD btwn Wks	2.85	SD btwn Wks	3.31
Labs Excld	0	0	1	2	Labs Incld	52	Labs Incld	52
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D3

TAPPI Official Test Method T822

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2LD9TK	90.2	89.2	86.2	87.5	88.3	-0.16	3.0	1.8	89.9	0.23	3.3	2.3	8	TH
2XAAD3	86.3	89.2	86.4	86.4	87.1	-0.44	4.1	1.4	89.6	0.19	4.2	3.0	8	LC
42K686	87.6	89.5	86.1	86.7	87.5	-0.34	4.0	1.5	88.0	-0.17	4.1	1.2	8	LD
67CFXU	91.3	90.7	90.2	94.4	91.7	0.61	3.4	1.9	91.4	0.56	4.1	1.5	8	LC
69HZLU	87.7	87.1	84.2	85.2	86.0	-0.66	2.9	1.6	86.7	-0.44	3.2	1.3	8	LD
6L69KG	91.2	92.7 L	92.4	93.0	92.3	0.76	2.8	0.8	93.6	1.04	3.2	1.7	8	LD
6WMPDM	85.6	88.2	87.9	85.9	86.9	-0.47	3.8	1.3	86.3	-0.53	4.1	1.7	8	LD
8JMXHT	85.9	79.1 *	87.6	89.3	85.4	-0.80	4.5	4.5	84.9	-0.83	5.6	5.7	8	LZ
8MQL7W	86.1 H	87.7	85.5	No Data	86.4	-0.58	4.7	1.1	86.9	-0.39	4.3	2.1	7	LG
8UMN2F	87.6	89.5	89.7	86.9	88.4	-0.13	4.3	1.4	88.6	-0.05	4.5	1.5	7	XX
8UUTLY	87.3	86.6	88.3	87.8	87.5	-0.33	4.2	0.7	84.9	-0.83	3.6	2.9	8	LD
8VMG4U	103.6 X	97.9	99.7 *	101.1 *	100.6	2.62 *	4.7	2.4	100.1	2.45 *	4.4	2.3	8	LC
9CK7RB	98.5 *	97.9	97.9	97.8	98.0	2.05 *	4.5	0.3 L	98.2	2.04 *	4.3	2.2	8	LZ
9EV46T	89.1	90.3	90.1	88.2	89.4	0.10	3.9	1.0	90.1	0.29	3.7	1.2	8	EM
9FJM3J	98.0	98.4	99.7 *	92.5	97.2	1.85	4.6	3.2	98.7	2.14 *	4.2	2.9	8	LD
9GE62Z	62.2 X	63.0 X	61.7 X	62.5 X	62.4	-6.02 X	4.7	0.5	65.6	-5.00 X	4.9	3.6	8	LD
9KG3CT	92.5	91.6	90.5	91.1	91.4	0.55	3.7	0.8	90.5	0.37	4.0	1.2	8	LD
9WRD6P	93.2	91.2	77.4 *	81.2	85.8	-0.73	3.8	7.7 H	85.1	-0.80	4.3	7.0	8	LD
AB9QXA	85.7	84.3 L	86.7	85.6	85.6	-0.77	3.2	1.0	84.5	-0.92	3.7	1.7	8	LC
ARXULQ	87.0	88.0	87.3	87.3	87.4	-0.35	4.1	0.4 L	87.5	-0.27	4.4	0.7 L	8	LC
BDAGEA	82.0	82.3	80.5	82.5	81.8	-1.62	3.6	0.9	81.5	-1.57	3.6	1.7	8	EM
BRQCTK	95.8	94.3	94.7 H	95.6	95.1	1.39	5.0	0.7	93.2	0.97	4.7	2.3	8	EM
ERH9TQ	86.1	85.6	85.7	84.2	85.4	-0.81	2.9	0.8	84.9	-0.84	3.2	1.0	8	LD
GQZRXN	92.7	91.1	88.5	91.4	90.9	0.44	3.7	1.8	90.8	0.45	3.7	1.2	8	LD
H6UX4N	81.5	80.4	82.7	85.3	82.5	-1.47	4.9	2.1	82.2	-1.42	4.5	2.0	8	EN
HCVZKH	92.3	91.0	91.1 L	91.2	91.4	0.54	3.1	0.6	91.4	0.56	3.1	0.5 L	8	TH
HFYN9K	96.5	94.1	95.4	93.0	94.8	1.31	5.5	1.5	96.7	1.71	5.3	2.4	8	LX
KU7QEX	91.3	96.3	94.2	97.2	94.7	1.30	3.6	2.6	92.6	0.84	3.8	3.7	8	LD
L7V6YC	86.2	86.5	87.0	88.1	87.0	-0.46	4.3	0.8	87.4	-0.29	4.0	1.0	8	LD
LL6VT6	89.1	88.9	89.0	89.0	89.0	0.00	3.0	0.1 L	88.2	-0.12	4.6	0.8 L	8	LD
LXM9FF	78.5 *	77.6 *	81.0	79.5	79.2	-2.22 *	4.4	1.5	76.8	-2.58 *	4.4	3.2	8	LC
MZHLAH	92.6	92.7 L	93.1	101.8 *	95.0	1.37	3.7	4.5	94.4	1.22	3.1	3.5	8	TJ
NN6N3U	92.6 L	90.2	90.6	92.3 L	91.4	0.56	2.5	1.2	91.2	0.53	2.4	1.0	8	LD
P8X2WC	83.0	84.9	85.2	84.1	84.3	-1.06	4.5	1.0	83.8	-1.07	4.6	1.9	8	LC
PA6AF6	87.0	87.1	87.4	87.7	87.3	-0.39	3.9	0.3 L	87.6	-0.26	4.1	0.6 L	8	EM

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D3

TAPPI Official Test Method T822

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
PPW7EE	90.3	90.0	95.2	92.4	92.0	0.68	4.1	2.4	91.1	0.49	4.6	2.0	8	LC
PQTJ38	82.9 H	92.0	83.1 H	86.3 H	86.1	-0.66	6.7	4.3	87.5	-0.28	6.0	5.8	8	MB
PVMGQY	90.9	90.6	91.4	90.7	90.9	0.43	3.8	0.4 L	91.1	0.50	3.5	0.4 L	8	LD
PX9D2A	79.5	86.0 L	84.9	85.1	83.9	-1.15	2.7	3.0	81.7	-1.54	3.4	3.1	8	LZ
PXPEZ7	88.5	87.1	88.5	90.9	88.8	-0.05	4.3	1.6	85.9	-0.61	4.1	3.6	8	EM
Q7ZXYV	80.9	89.2	82.2	87.6	85.0	-0.91	3.9	4.0	85.4	-0.72	3.9	3.1	8	EM
R6MNJ4	88.9	89.2	91.2 L	88.8 L	89.6	0.13	2.2	1.1	90.1	0.30	3.1	1.0	8	LZ
RCZ2YD	84.7 H	77.2 *H	78.8 *H	77.9 *H	79.7	-2.11 *	7.5	3.4	82.7	-1.32	7.1	4.1	8	LC
RGR46Y	80.4	78.9 *	81.5	82.1	80.7	-1.87	3.2	1.4	80.8	-1.71	2.9	1.1	8	TU
RJHAMA	90.8	91.6	89.8	89.4	90.4	0.32	3.3	1.0	91.0	0.48	3.3	1.1	8	LD
RKUX8A	94.5	93.1 H	91.5	95.4 H	93.6	1.05	7.3	1.7	93.9	1.10	6.5	1.3	8	MB
RLQHTN	91.5	92.7	92.2	92.6	92.3	0.74	3.3	0.5	91.8	0.66	3.8	1.3	8	LZ
TMXZNY	89.5	91.9	91.2	88.2	90.2	0.28	3.7	1.7	90.1	0.29	4.1	1.5	8	LD
UD4EV7	89.7 L	90.7	91.1	91.5	90.7	0.40	3.3	0.8	92.0	0.70	2.4	2.1	8	TD
UMB7A8	89.9	88.3	87.7	86.9	88.2	-0.18	3.4	1.3	88.4	-0.08	3.5	1.3	8	LD
UPNEWA	89.4	87.4	90.1	89.2	89.0	0.01	3.0	1.2	88.5	-0.07	2.9	1.1	8	LC
W96R29	90.6	86.2	88.7	89.4	88.7	-0.05	4.8	1.9	90.6	0.39	4.7	2.4	8	LC
WM8283	92.8	95.2	92.0	97.6	94.4	1.23	3.8	2.5	93.9	1.10	4.1	1.9	7	LZ
X7EWU7	86.7	87.1	86.7	88.8	87.3	-0.38	2.6	1.0	87.3	-0.31	3.4	1.3	8	LD
XH6NGV	96.3	100.3 *	94.8	69.9 XH	90.3	0.30	5.3	13.8 H	86.9	-0.41	7.0	14.6 H	8	LC
Z4LLAQ	75.8 *	67.9 X	78.1 *	80.4	75.6	-3.04 X	4.1	5.4	81.9	-1.49	4.2	13.5 H	8	MB
Z4YABH	90.6	88.4	89.8	89.6	89.6	0.14	3.1	0.9	90.2	0.31	4.2	1.5	8	TH

Consensus (All Labs) Results

Wk Mean	88.59	89.18	88.58	89.10	Month Mean	88.98	Grand Mean	88.77
Avg SDr	4.17	4.04	3.87	4.15	Avg SD	4.10	Avg SD	4.20
SD btwn Labs	4.87	4.95	4.97	5.03	SD btwn Labs	4.42	SD btwn Labs	4.63
Labs Incld	55	55	56	54	SD btwn Wks	2.83	SD btwn Wks	3.59
Labs Excld	2	2	1	2	Labs Incld	55	Labs Incld	56
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LG	L&W 753	LX	L&W 506
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TD	TMI Digital Crush Tester, Model 17-09	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2LD9TK	75.3	75.1	75.7	77.1	75.8	-0.67	4.6	0.9	74.7	-1.30	3.7	1.5	12	TH
2XAAD3	80.6 H	77.9	77.7	77.1	78.3	-0.08	5.6	1.6	78.0	-0.12	4.8	1.8	12	LC
42K686	78.3	78.1	79.1	78.1	78.4	-0.06	3.5	0.5	78.5	0.06	3.2	1.4	12	LD
67CFXU	84.7	83.4	81.5	81.6	82.8	0.97	3.2	1.6	81.9	1.30	3.4	1.5	12	LC
69HZLU	77.5	78.6	76.4	75.0	76.9	-0.42	2.9	1.5	78.6	0.10	3.0	4.3	12	LD
6L69KG	81.2	78.8	79.5	80.7	80.0	0.32	2.9	1.1	80.0	0.61	3.5	1.9	12	LD
6WMPDM	77.7	79.4	78.3	77.7	78.3	-0.09	4.4	0.8	77.6	-0.24	3.8	1.2	11	LD
8JMXHT	76.1	76.7 H	75.9	82.8	77.9	-0.18	4.5	3.3	75.2	-1.11	4.6	3.5	12	LZ
8MQL7W	76.5	78.6	76.0	No Data	77.0	-0.38	4.1	1.4	78.3	-0.01	3.3	2.0	10	LG
8UMN2F	79.8	84.9	82.5	79.9	81.8	0.73	3.4	2.4	77.0	-0.48	5.1	7.0 H	12	XX
8UUTLY	78.5	77.9	77.6	77.7	77.9	-0.17	2.9	0.4 L	75.9	-0.85	3.1	1.8	12	LD
8VMG4U	87.4 L	88.2 *	86.9 *	83.4	86.5	1.84	2.5	2.1	83.9	2.03 *	3.6	3.6	12	LC
9CK7RB	84.8 H	86.0	87.1 *	85.1	85.7	1.66	4.6	1.0	83.1	1.72	4.2	3.3	11	LZ
9EV46T	76.4	80.1	74.2	78.5	77.3	-0.32	3.1	2.6	77.8	-0.19	3.2	2.0	11	EM
9FJM3J	90.0 *	88.9 *	89.4 *	90.0 *	89.6	2.56 *	3.6	0.5	88.2	3.54 X	3.4	1.5	12	LD
9GE62Z	54.9 X	57.3 X	54.6 X	54.3 X	55.3	-5.49 X	2.8	1.4	55.3	-8.27 X	2.8	1.4	4	LD
9KG3CT	79.3	80.8	78.4	79.2	79.4	0.17	3.2	1.0	80.8	0.89	3.4	1.7	12	LD
9WRD6P	83.8	77.7	65.4 X	67.2 *	73.5	-1.20	3.9	8.7 H	75.0	-1.19	3.9	6.0	12	LD
AB9QXA	78.0	76.6	80.5	78.1	78.3	-0.09	2.8	1.6	77.4	-0.32	2.9	1.7	8	LC
ARXULQ	78.1	75.2	77.3	79.1	77.4	-0.30	2.9	1.7	73.9	-1.58	3.5	3.2	12	LC
BDAGEA	71.4	71.2	70.9	71.2	71.1	-1.76	4.0	0.2 L	71.5	-2.43 *	3.5	0.9 L	8	EM
BRQCTK	82.2	83.5	83.2	86.5	83.8	1.22	3.8	1.9	82.7	1.57	3.3	1.5	12	EM
ERH9TQ	75.5	73.7	74.4	74.3	74.5	-0.98	3.5	0.8	75.5	-1.02	4.1	1.9	12	LD
GQZRXN	81.3	79.7	80.0	82.0	80.7	0.49	3.0	1.1	80.5	0.79	3.1	1.3	12	LD
H6UX4N	74.3	74.0	75.5	76.1	75.0	-0.87	3.6	1.0	75.1	-1.13	3.0	1.0	12	EN
HCVZKH	78.2	79.0	77.7	78.5	78.3	-0.08	2.7	0.6	79.5	0.42	2.5	1.5	12	TH
HFYN9K	86.0 H	81.2	81.5	83.8 H	83.1	1.05	6.0	2.3	83.4	1.83	5.9	3.3	12	LX
KU7QEX	82.8	84.2	81.3	83.5	82.9	1.00	3.2	1.2	79.4	0.39	3.2	3.5	12	LD
L7V6YC	79.4	76.2	78.7	79.8	78.5	-0.03	3.2	1.6	78.2	-0.05	3.6	1.2	12	LD
LL6VT6	77.8	77.9	77.9 H	77.7	77.8	-0.19	5.0	0.1 L	77.6	-0.24	4.3	0.6 L	12	LD
LXM9FF	64.2 X	65.1 X	71.9	68.6	67.4	-2.63 *	4.3	3.5	66.7	-4.15 X	4.0	3.8	12	LC
MZHLAH	86.0	79.7	78.3	86.0	82.5	0.90	2.7	4.1	76.4	-0.68	2.7	5.8	12	TJ
NN6N3U	82.0	81.0	81.5 L	82.0 L	81.6	0.69	1.9	0.5	81.6	1.18	2.2	0.9 L	12	LD
P8X2WC	76.6	76.7	78.0	77.2	77.1	-0.36	3.3	0.6	77.8	-0.16	3.8	1.3	12	LC
PA6AF6	80.0	81.7	80.4	80.7	80.7	0.48	2.5	0.7	80.0	0.61	2.3	0.8 L	12	EX

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 35 lb Linerboard - 35E1

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
PPW7EE	81.6	79.4	77.2	80.1	79.6	0.22	3.4	1.8	77.6	-0.24	4.3	8.7 H	12	LC
PQTJ38	71.7 H	79.8	73.0 H	74.9 H	74.9	-0.89	7.6	3.6	74.4	-1.41	6.6	6.7	12	MB
PVMGQY	81.3	81.6	81.1	81.9	81.5	0.67	3.3	0.4 L	80.9	0.93	3.8	0.7 L	12	LD
PX9D2A	68.3 *	72.6	71.7	71.3	71.0	-1.80	3.9	1.9	68.7	-3.45 X	4.2	4.3	12	LZ
PXPEZ7	77.5	79.6	79.7	79.4	79.0	0.09	2.9	1.1	78.5	0.07	2.9	2.1	12	EM
Q7ZXYV	72.6	76.0	70.0 *	75.3	73.5	-1.22	3.1	2.7	75.9	-0.85	2.9	2.4	12	EM
R6MNJ4	80.9 L	77.8 L	79.2 L	78.7	79.1	0.11	1.6	1.3	78.1	-0.06	2.5	1.1	12	LZ
RCZ2YD	68.9 *H	70.9	72.6 H	71.1	70.9	-1.83	7.1	1.5	74.5	-1.36	6.6	3.3	12	LC
RGR46Y	69.9	69.4 *	71.6	72.6	70.9	-1.83	2.3	1.5	70.0	-2.98 X	2.6	3.0	12	TU
RJHAMA	76.8	79.8	76.6	78.7	78.0	-0.16	3.3	1.5	78.0	-0.09	3.6	1.0	12	LD
RKUX8A	82.5	81.9	80.5 H	82.5 H	81.8	0.75	6.5	0.9	76.7	-0.58	6.7	4.1	12	MB
RLQHTN	85.7	85.2	85.4	85.3	85.4	1.58	3.2	0.2 L	83.6	1.91	3.0	2.0	12	LZ
TMXZNY	81.3	83.4	80.0	83.3	82.0	0.78	3.8	1.7	80.3	0.72	3.7	3.2	12	LD
UD4EV7	75.0	74.0	78.7	73.5	75.3	-0.78	3.2	2.4	76.1	-0.78	2.3	2.8	12	TD
UMB7A8	78.8	77.4	78.3	77.1	77.9	-0.18	3.5	0.8	77.5	-0.27	3.1	1.4	12	LD
UPNEWA	77.2	77.0	78.2	75.7	77.0	-0.38	2.5	1.0	76.0	-0.84	3.2	2.2	12	LC
W96R29	80.6	75.3	81.2	71.9	77.2	-0.33	3.5	4.4	78.9	0.21	4.2	3.4	12	LC
WM8283	83.4	83.8	84.4	84.7	84.1	1.27	2.9	0.6	83.2	1.77	3.0	1.4	12	LZ
X7EWU7	81.8 L	78.6	80.0	79.2	79.9	0.29	2.9	1.4	79.3	0.36	2.6	1.6	12	LD
XH6NGV	88.6	88.2 *	88.0 *	64.8 *H	82.4	0.87	5.9	11.7 H	79.1	0.28	5.8	12.0 H	12	LC
Z4LLAQ	66.3 *	61.0 X	59.0 X	68.1 *H	63.6	-3.53 X	6.0	4.3	68.2	-3.62 X	4.9	9.7 H	12	MB
Z4YABH	78.0	77.4	76.0	75.6	76.7	-0.45	3.5	1.1	77.9	-0.13	3.2	2.0	12	TH

Consensus (All Labs) Results

Wk Mean	79.02	79.10	78.67	78.21	Month Mean	78.66	Grand Mean	78.30
Avg SDr	3.92	3.57	3.81	4.25	Avg SD	3.85	Avg SD	3.83
SD btwn Labs	5.00	4.27	4.25	5.17	SD btwn Labs	4.26	SD btwn Labs	2.78
Labs Incld	55	54	54	55	SD btwn Wks	2.63	SD btwn Wks	3.44
Labs Excld	2	3	3	1	Labs Incld	55	Labs Incld	51
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LG	L&W 753
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D3

TAPPI Official Test Method T826

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2XAAD3	24.7 *	24.1	23.9	24.4	24.3	1.51	2.0	0.3	24.2	1.55	2.1	0.6	8	LW
3NYC34	22.5	22.0	22.8	22.8	22.5	-0.08	2.0	0.4	22.0	-0.60	1.9	0.9	8	XX
3VJF7Z	22.0	22.8 L	22.4	22.3	22.4	-0.22	1.6	0.3	22.7	0.09	2.0	0.4	8	LW
67CFXU	22.0	22.6	21.9	22.8	22.3	-0.27	2.0	0.5	22.4	-0.14	2.1	0.4	8	LU
69HZLU	21.2 H	20.8	19.6 *	19.7 *	20.3	-2.14 *	2.0	0.8	20.7	-1.87	2.7	1.0	8	LW
6L69KG	23.0	23.2	23.2	23.3	23.2	0.51	1.3	0.1	23.1	0.47	1.3	0.2	8	LH
6WMPDM	21.8	22.4	22.7	22.7	22.4	-0.20	1.5	0.4	22.1	-0.46	1.5	0.8	8	LY
6XH8D4	21.0	22.0	23.6	23.8	22.6	-0.02	1.9	1.3	23.1	0.50	1.9	1.1	8	LU
73BMNW	21.1 L	22.1 L	22.5 L	21.0 L	21.7	-0.89	0.0	0.8	21.5	-1.05	0.0	0.6	8	LW
8JMXHT	21.0	22.6	20.9	22.7	21.8	-0.78	2.0	1.0	22.4	-0.19	2.1	1.4	8	LA
8MQL7W	22.2	21.6	21.5	No Data	21.7	-0.81	2.0	0.4	21.4	-1.19	1.9	0.6	7	LU
8UMN2F	24.7 *L	23.8 L	23.9 L	23.1 L	23.9	1.14	0.1	0.7	23.2	0.66	0.1	0.8	8	XX
8UUTLY	22.6	23.5	22.2	23.1	22.8	0.21	1.6	0.5	22.1	-0.44	1.7	0.9	8	LU
8VMG4U	23.0 L	22.6 L	23.1 L	22.7 L	22.9	0.21	0.0	0.2	22.5	-0.06	0.0	0.5	8	LW
9GE62Z	21.6	21.7	21.4	22.1	21.7	-0.83	1.4	0.3	21.9	-0.70	1.8	0.4	8	LY
9KG3CT	21.4	22.4 H	22.7	23.5	22.5	-0.13	2.3	0.9	22.7	0.09	1.9	0.6	8	LA
ARXULQ	22.7	22.7	23.0 H	24.0	23.1	0.42	2.4	0.6	22.8	0.25	2.3	0.6	8	LW
B2D8W8	22.2	22.1 L	22.5 L	22.8 L	22.4	-0.21	0.9	0.3	22.3	-0.32	1.0	0.5	8	TT
CMG9QP	22.0	24.0 H	24.5	24.0 H	23.6	0.93	2.3	1.1	23.6	1.03	2.4	0.8	8	LH
CQUX7R	22.6	22.2	22.3 H	21.6	22.2	-0.41	2.1	0.4	22.0	-0.60	2.0	0.4	8	LW
ERH9TQ	23.8	22.1	21.8	21.7	22.4	-0.24	1.7	1.0	22.4	-0.21	1.9	0.7	8	LA
F49DKM	24.3	24.3 H	24.7	25.6 *H	24.7	1.96 *	2.3	0.6	24.6	1.97 *	2.2	0.5	8	LA
GQZRXN	22.5	22.1	23.0	22.4	22.5	-0.11	2.0	0.4	22.3	-0.31	2.2	0.4	8	LY
H6UX4N	20.8	21.1	21.2	21.1	21.1	-1.43	1.9	0.2	21.3	-1.26	1.9	0.5	8	LY
KNX6RL	21.7	21.6	21.1	20.5 *	21.2	-1.31	1.8	0.6	21.4	-1.13	1.8	0.5	8	XX
KTR8RF	21.9	21.1	22.5	22.8	22.1	-0.50	2.0	0.8	22.2	-0.33	1.9	0.7	8	LA
KU7QEX	23.7	23.2	21.4	24.1 H	23.1	0.44	2.1	1.2	23.0	0.40	2.0	1.1	8	LZ
L7V6YC	21.7	23.1 L	22.9	22.2	22.5	-0.13	1.3	0.6	22.6	0.05	1.6	0.5	8	LA
LXM9FF	24.1	23.4	23.9	24.3	23.9	1.21	1.9	0.4	23.7	1.12	1.8	0.4	8	XX
NN6N3U	21.5	21.4	20.9	21.2	21.2	-1.29	1.6	0.3	21.2	-1.36	1.6	0.3	8	LY
P8X2WC	22.9	22.4 L	22.5	23.4	22.8	0.17	1.3	0.4	23.0	0.42	1.6	0.4	8	ID
PGJD4J	24.8 *	26.2 X	25.6 *	25.4 *	25.5	2.66 *	2.0	0.6	25.1	2.47 *	2.1	1.2	8	LH
PPW7EE	20.9 L	20.1 *L	18.3 XL	21.7 L	20.2	-2.19 *	0.0	1.5 H	20.1	-2.42 *	0.5	1.1	8	LA
PQTJ38	21.8	22.6	21.4	22.5	22.1	-0.52	1.7	0.6	22.3	-0.29	1.8	0.5	8	LA
PVMGQY	22.2 H	22.9	22.8	22.6	22.6	0.02	2.1	0.3	22.7	0.16	1.9	0.3	8	LA

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D3

TAPPI Official Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
PX9D2A	21.4	21.2	20.6	22.3	21.4	-1.16	2.0	0.7	21.2	-1.39	1.9	0.6	8	LZ
Q7ZXYV	22.4	24.4	21.1	24.6	23.1	0.47	1.9	1.7 H	22.7	0.07	1.6	1.3	8	LZ
QB8N22	24.0 L	23.9	23.1 L	21.7 L	23.2	0.50	1.0	1.1	23.5	0.89	2.2	1.2	8	LA
RCZ2YD	23.4 H	24.7	24.3	23.3	23.9	1.20	2.1	0.7	24.1	1.47	2.2	0.7	8	LU
RF6K98	47.8 X	46.9 XL	48.5 X	44.8 XL	47.0	22.51 X	1.3	1.6 H	47.0	24.05 X	1.3	1.6 H	4	LA
RJHAMA	22.3	22.2	21.5	22.1	22.0	-0.55	1.9	0.3	22.5	-0.07	1.9	0.6	8	LY
RKUX8A	43.1 XL	43.5 XL	41.9 XL	43.3 XL	42.9	18.78 X	0.4	0.7	34.3	11.60 X	0.4	9.3 H	8	BK
TMXZNY	24.8 *L	24.1 L	24.8 L	24.1 L	24.5	1.69	0.0	0.4	23.9	1.27	0.0	0.7	8	LU
U3MPYL	21.1	22.5	22.6	22.3	22.1	-0.46	2.1	0.7	21.9	-0.70	2.2	0.8	8	XX
UMB7A8	21.7	21.7	22.4	21.7	21.9	-0.68	1.4	0.3	22.1	-0.49	1.5	0.6	8	BK
UPNEWA	22.9 L	22.8 L	22.9 L	22.4 L	22.8	0.12	0.4	0.2	23.5	0.87	1.3	0.8	8	LA
V29GAX	25.9 XH	25.1 *H	23.9	24.4	24.8	2.04 *	2.3	0.9	24.5	1.91	2.1	0.8	8	LZ
VNKHGA	23.3	22.8	22.7	23.0	23.0	0.32	1.8	0.3	23.3	0.70	2.1	0.8	8	LU
W96R29	22.8	23.3	22.8	23.6 H	23.1	0.45	2.0	0.4	23.1	0.52	2.0	0.6	8	LA
WM8283	21.5	20.6	21.2	21.6	21.2	-1.30	1.9	0.4	21.1	-1.47	1.8	0.8	7	LW
X2NFN8	22.3	22.4	22.5	21.8	22.2	-0.36	2.0	0.3	22.0	-0.58	1.9	0.6	8	LU
X7EWU7	22.3	21.8	22.9	21.9	22.2	-0.39	1.9	0.5	22.2	-0.42	1.7	0.6	8	LA
Z4YABH	22.5 L	22.1 L	22.0 L	22.7 L	22.3	-0.28	0.9	0.4	22.1	-0.44	1.0	0.4	8	TT
ZFTVC8	22.2	23.7	21.9	23.7 L	22.9	0.24	1.5	0.9	22.8	0.19	1.8	0.7	8	LA
ZQC8Q6	24.8 *H	23.4 H	24.7 H	24.0	24.2	1.48	2.6	0.6	24.0	1.38	2.4	0.8	8	XX

Consensus (All Labs) Results

Wk Mean	22.49	22.60	22.57	22.79	Month Mean	22.62	Grand Mean	22.58
Avg SDr	1.78	1.71	1.79	1.82	Avg SD	1.78	Avg SD	1.82
SD btwn Labs	1.12	1.08	1.21	1.19	SD btwn Labs	1.08	SD btwn Labs	1.01
Labs Incld	52	52	52	52	SD btwn Wks	0.68	SD btwn Wks	0.73
Labs Excld	3	3	3	2	Labs Incld	53	Labs Incld	53
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2XAAD3	24.2	22.8	23.0	23.6	23.4	1.00	1.9	0.6	22.8	0.67	1.8	0.7	12	LW
3NYC34	22.8	21.4	22.8	23.2	22.5	0.25	1.7	0.8	22.1	0.04	1.9	0.7	12	XX
3VJF7Z	21.8	22.0	21.2	21.2	21.5	-0.58	1.4	0.4	21.9	-0.14	1.7	0.4	12	LW
67CFXU	22.5	21.9	22.5	22.0	22.2	0.02	1.8	0.3	22.1	0.02	1.7	0.3	12	LU
69HZLU	20.1	19.8	20.4	20.2	20.1	-1.81	1.6	0.2	20.1	-1.95 *	1.6	0.2 L	12	LW
6L69KG	22.5	22.8	23.1	23.1	22.9	0.59	1.3	0.3	22.7	0.60	1.4	0.3 L	12	LH
6WMPDM	20.0	21.6	22.6	23.1	21.8	-0.36	1.5	1.4	21.7	-0.34	1.5	0.8	12	LY
6XH8D4	20.9	21.0	22.7	24.0	22.2	-0.05	1.4	1.5 H	22.5	0.37	1.4	1.3	12	LU
73BMNW	22.3 L	21.4 L	22.4 L	22.1 L	22.0	-0.15	0.0	0.4	22.0	-0.11	0.0	1.7	12	LW
8JMXHT	19.9	21.6	20.1	24.0	21.4	-0.70	1.6	1.9 H	20.9	-1.16	1.4	1.1	12	LA
8MQL7W	21.1	21.6	22.3	No Data	21.7	-0.46	1.3	0.6	21.4	-0.70	1.6	0.4	10	LW
8UMN2F	21.0 L	22.9 L	23.9 L	21.5 L	22.3	0.08	0.1	1.3	21.8	-0.32	0.8	1.1	12	XX
8UUTLY	21.5 L	21.2	21.6	22.0	21.6	-0.57	1.3	0.3	21.4	-0.71	1.6	0.4	12	LU
8VMG4U	21.4 L	22.4 L	21.5 L	21.9 L	21.8	-0.36	0.0	0.5	21.2	-0.90	0.0	1.0	12	LW
9GE62Z	21.1	21.1	21.1	22.4	21.4	-0.70	1.5	0.6	21.4	-0.66	1.5	0.6	4	LY
9KG3CT	22.0	22.3	21.8	22.1	22.0	-0.17	1.4	0.2	22.0	-0.07	1.8	0.6	12	LA
ARXULQ	23.5	23.4	23.6	22.9	23.3	0.96	1.9	0.3	22.5	0.35	1.7	1.1	12	LW
B2D8W8	21.8 L	22.0 L	22.0 L	21.7 L	21.9	-0.31	0.7	0.2	21.9	-0.18	0.8	0.3 L	12	TT
CMG9QP	23.4 L	25.4 *	24.8 *	24.6	24.5	2.00 *	1.6	0.8	23.1	0.98	1.8	1.2	12	LH
CQUX7R	22.5	21.0	21.9	22.8	22.1	-0.13	1.7	0.8	21.8	-0.32	1.6	0.5	12	LW
ERH9TQ	21.4	22.4	21.2	21.7	21.7	-0.45	1.7	0.5	22.0	-0.07	1.4	0.6	12	LA
F49DKM	23.7	25.0 *	24.2	24.9 *	24.5	1.95 *	1.8	0.6	24.3	2.14 *	1.8	0.7	12	LA
GQZRXN	22.1	22.3	22.0	22.2	22.1	-0.07	1.6	0.1	21.8	-0.25	1.7	0.4	12	LY
H6UX4N	21.4	20.2	22.3	21.2	21.3	-0.84	1.7	0.9	21.0	-1.03	1.7	0.6	12	LY
KNX6RL	21.3	21.3	20.8	20.8	21.1	-0.98	1.8	0.3	20.7	-1.39	1.7	0.5	12	XX
KTR8RF	21.4	21.9	23.0	23.4	22.4	0.17	1.8	0.9	22.2	0.12	1.7	0.7	12	LA
KU7QEX	22.9 L	22.8	22.5	23.8 H	23.0	0.68	1.8	0.5	22.2	0.07	1.7	1.1	12	LZ
L7V6YC	22.5	23.0 L	22.1	22.1	22.4	0.18	1.1	0.4	22.2	0.05	1.0	0.5	12	LA
LXM9FF	23.5	23.6	23.5	24.6	23.8	1.38	1.7	0.5	23.1	1.01	1.9	1.1	12	XX
NN6N3U	20.3 L	20.4	20.2	20.9	20.4	-1.54	1.3	0.3	20.6	-1.46	1.4	0.5	12	LY
P8X2WC	22.0	22.0	21.9	21.9	22.0	-0.23	1.1	0.1 L	21.7	-0.41	1.2	0.4	12	ID
PGJD4J	24.9 *H	25.0 *	24.8 *H	25.4 *	25.0	2.40 *	2.2	0.2	24.4	2.22 *	1.9	0.6	12	LH
PPW7EE	19.8 L	19.7 L	19.4 *L	20.0 L	19.8	-2.14 *	0.0	0.2	20.2	-1.88	0.5	1.0	12	LA
PQTJ38	21.5	22.4	22.0	21.9	21.9	-0.24	1.9	0.4	21.6	-0.48	1.8	0.5	12	LA
PVMGQY	21.8	21.4	21.5	21.6	21.5	-0.59	1.6	0.2	21.5	-0.57	1.5	0.3 L	12	LA

Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
PX9D2A	21.4	21.0	20.9 H	21.3	21.1	-0.93	1.9	0.2	21.0	-1.08	1.8	0.5	12	LZ
Q7ZXYV	21.9 H	22.5	20.9	23.4	22.2	-0.04	2.0	1.0	22.5	0.40	1.7	0.9	12	LZ
QB8N22	24.5 *H	21.4 L	20.4 L	22.0	22.1	-0.13	1.4	1.7 H	22.4	0.29	1.5	1.1	12	LA
RCZ2YD	23.7	25.1 *	24.5	24.1	24.4	1.85	1.7	0.6	23.7	1.58	1.7	0.7	12	LU
RF6K98	33.8 XL	35.1 XL	34.1 X	36.1 X	34.8	10.88 X	1.0	1.0	34.8	12.28 X	1.0	1.0	4	LA
RJHAMA	22.4	22.4	21.3	22.2	22.1	-0.14	1.4	0.5	22.3	0.23	1.7	0.6	12	LU
RKUX8A	32.3 XL	32.3 XL	33.9 XL	35.4 X	33.5	9.74 X	0.7	1.5 H	24.7	2.53 *	0.5	6.7 H	12	BK
TMXZNY	22.9 L	24.8 L	24.1 L	23.2 L	23.7	1.32	0.0	0.9	23.4	1.24	0.0	1.4	12	LU
U3MPYL	21.1	20.9	22.5	21.9	21.6	-0.54	1.5	0.8	21.8	-0.31	1.6	0.6	8	LY
UMB7A8	21.5	21.0	21.0	19.8 *	20.9	-1.18	1.5	0.7	21.1	-0.95	1.4	0.6	12	BK
UPNEWA	21.2 L	22.2 L	21.1 L	21.8 L	21.6	-0.56	0.3	0.5	20.7	-1.38	1.3	0.8	12	LA
V29GAX	25.9 X	25.0 *	24.3	24.5	24.9	2.34 *	1.9	0.7	24.3	2.09 *	1.9	1.3	8	LZ
VNKHGA	22.2	23.1	23.6	22.9	22.9	0.63	1.7	0.6	22.8	0.68	1.7	0.6	12	LU
W96R29	22.4	21.8	22.9	22.7 H	22.4	0.18	1.8	0.5	22.1	0.02	1.7	0.9	12	LA
WM8283	20.6	20.5	21.1	20.7	20.7	-1.30	1.7	0.3	21.0	-1.03	1.7	0.7	12	LW
X2NFN8	22.3	22.2	20.6	21.5	21.6	-0.50	1.8	0.8	22.8	0.70	2.0	1.1	12	LU
X7EWU7	22.1	22.2	21.4	21.3	21.8	-0.39	1.5	0.5	22.1	-0.01	1.7	0.4	12	LW
Z4YABH	22.1	21.5	21.8 L	22.0 L	21.8	-0.33	1.0	0.3	21.8	-0.29	0.9	0.2 L	12	TT
ZFTVC8	21.8	22.2	22.6	21.6	22.1	-0.13	1.8	0.4	22.5	0.41	1.7	0.7	12	LA
ZQC8Q6	23.9	24.8	23.6	24.1	24.1	1.61	1.8	0.5	23.5	1.32	1.7	0.7	12	XX

Consensus (All Labs) Results

Wk Mean	22.01	22.22	22.18	22.42	Month Mean	22.22	Grand Mean	22.09
Avg SDr	1.52	1.57	1.52	1.57	Avg SD	1.55	Avg SD	1.54
SD btwn Labs	1.16	1.38	1.28	1.29	SD btwn Labs	1.15	SD btwn Labs	1.03
Labs Incld	52	53	53	52	SD btwn Wks	0.71	SD btwn Wks	1.20
Labs Excld	3	2	2	2	Labs Incld	53	Labs Incld	54
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

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

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
6WMPDM	177.5	0.34	7.77	L	178.6	0.20	2.55	4	EV
8JMXHT	119.1	-2.32 *	15.74		124.8	-2.38 *	5.02	4	LA
8UMN2F	173.9	0.18	10.91		193.9	0.94	17.32 H	3	EV
8UUTLY	182.8	0.58	22.14		181.9	0.36	2.19	4	EV
8VMG4U	190.6	0.94	19.00		190.3	0.76	6.77	4	EV
9FJM3J	135.1	-1.59	19.34		146.0	-1.36	7.70	4	EV
ARXULQ	179.7	0.44	15.44		175.3	0.04	9.32	4	XX
H6UX4N	177.0	0.31	17.58		176.5	0.10	4.44	4	EV
KTR8RF	169.4	-0.03	17.54		183.8	0.45	10.43	4	LA
KU7QEX	160.1	-0.45	15.54		163.5	-0.52	4.84	4	LA
PPW7EE	198.0	1.27	34.27	H	209.3	1.68	9.83	4	LA
PVMGQY	170.8	0.03	17.79		168.6	-0.28	2.73	4	XX
QC382H	160.6	-0.43	8.21	L	162.6	-0.57	3.41	4	EV
RCZ2YD	146.5	-1.07	16.44		147.8	-1.28	3.71	4	EV
RKUX8A	211.9	1.91 *	34.48	H	210.2	1.72	4.19	4	EV
V29GAX	177.7	0.35	18.83		175.1	0.04	7.79	4	XX
VNKHGA	142.8	-1.24	11.68		163.1	-0.54	14.70	4	EV
W96R29	164.6	-0.25	14.71		167.0	-0.35	5.86	4	LA
WM8283	177.9	0.36	8.19	L	178.8	0.21	6.95	4	EV
X7EWU7	196.9	1.22	27.47		202.2	1.34	10.40	4	LA
ZFTVC8	158.1	-0.54	15.12		163.0	-0.55	3.83	4	LA

Consensus (All Labs) Results

Month Mean	170.04	Grand Mean	174.39
Avg SD	18.93	Avg SD Months	7.90
SD btwn Labs	21.97	SD btwn Labs	20.82
Labs Incld	21	Labs Incld	21

Key to Instrument Codes Reported by Participants

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

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
67CFXU	370.3	0.22	7.82	370.9	0.17	2.72	4	XX
8LUB62	383.2	1.47	12.14	377.9	0.79	3.99	4	PP
9CK7RB	355.6	-1.21	7.20	356.6	-1.09	3.08	3	TS
9KG3CT	378.5	1.01	7.37	378.4	0.83	7.12	4	XX
ERH9TQ	360.5	-0.73	11.63	357.6	-1.00	3.70	4	LA
L7V6YC	360.9	-0.69	7.19	364.1	-0.44	2.15	4	LA
MXZ84W	368.6	0.05	9.45	385.9	1.49	22.88 H	4	XX
Q7ZXYV	385.6	1.70	6.57	385.4	1.45	5.45	4	XX
QB8N22	366.3	-0.17	6.43	366.1	-0.26	2.21	4	XX
RF6K98	359.4	-0.84	8.95	359.4	-0.85	0.00	1	LA
Y793M6	359.7	-0.81	10.01	356.6	-1.09	3.00	4	LA

Consensus (All Labs) Results

Month Mean	368.06	Grand Mean	368.99
Avg SD	8.82	Avg SD Months	8.18
SD btwn Labs	10.31	SD btwn Labs	11.34
Labs Incld	11	Labs Incld	11

Key to Instrument Codes Reported by Participants

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

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
67CFXU	111.3	0.26	5.20		113.2	0.34	1.34 L	4	HY
69HZLU	116.8	0.55	4.32		115.2	0.44	2.47	4	TM
6WMPDM	83.0	-1.26	5.42		86.3	-0.99	2.53	4	XX
8JMXHT	107.0	0.03	5.05		105.6	-0.04	3.83	4	TM
8UUTLY	82.0	-1.31	3.87		86.1	-1.00	3.15	4	TM
8VMG4U	150.0	2.33 *	13.23		154.5	2.38 *	10.34	4	SC
9FJM3J	122.2	0.84	16.77		117.7	0.56	4.23	4	HY
9KG3CT	52.1	-2.92 X	0.63 L		55.7	-2.50 *	5.01	4	LZ
KDEXQC	103.4	-0.17	5.32		107.0	0.03	5.67	4	TM
L7V6YC	103.2	-0.18	5.72		103.4	-0.15	7.76	4	SC
LXM9FF	122.6	0.86	10.85		82.5	-1.18	28.67 H	4	SC
PPW7EE	119.0	0.67	6.52		138.5	1.59	32.55 H	4	HY
QB8N22	102.2	-0.23	3.70		109.8	0.17	6.65	4	SC
RCZ2YD	92.4	-0.76	10.53		92.5	-0.69	2.29	4	TM
RKU66V	98.0	-0.46	7.96		97.6	-0.43	1.88	4	TM
TMXZNY	108.2	0.09	6.98		111.8	0.27	8.25	3	HZ
UPNEWA	97.0	-0.51	14.65		99.2	-0.35	3.01	4	TM
V29GAX	110.4	0.21	9.04		105.0	-0.07	3.61	4	TM
VNKHGA	67.2	-2.11 *	6.50		67.2	-1.94 *	3.31	4	TM
X7EWU7	128.0	1.15	14.73		127.9	1.07	0.90 L	4	HY

Consensus (All Labs) Results

Month Mean	106.52	Grand Mean	106.35
Avg SD	9.13	Avg SD Months	10.98
SD btwn Labs	18.65	SD btwn Labs	20.21
Labs Incld	19	Labs Incld	19

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	105.47	19.44	1.05	16
Modified Scott Bond Mechanics	119.66	11.79	13.14	2

Analysis Notes

9KG3CT - 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

	Monthly Results				Cumulative Results			
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months
2XAAD3	27.4	0.26	1.14		27.9	0.59	1.55	4
3NYC34	26.4	-0.07	3.71		27.5	0.41	2.25	4
67CFXU	26.2	-0.13	1.73		21.4	-1.95 *	4.62 H	3
69HZLU	20.9	-1.84	4.35		20.9	-2.13 *	0.68	4
6WMPDM	27.4	0.26	2.51		27.3	0.36	1.04	4
8JMXHT	22.6	-1.30	0.89		26.8	0.16	3.10	4
8UUTLY	29.6	0.98	2.88		28.7	0.90	1.41	4
8VMG4U	25.6	-0.33	1.14		26.1	-0.11	2.11	4
9KG3CT	29.0	0.78	1.00		28.0	0.61	2.24	4
ARXULQ	24.2	-0.78	2.28		26.4	-0.02	2.36	4
H6UX4N	27.2	0.21	2.02		26.9	0.21	1.72	4
KNX6RL	28.2	0.52	4.76		27.9	0.57	2.06	4
KTR8RF	30.2	1.16	3.37		29.4	1.19	1.96	4
PPW7EE	27.9	0.43	5.86 H		28.3	0.74	1.17	4
PVMGQY	25.6	-0.33	1.14		25.2	-0.46	0.67	4
PX9D2A	24.8	-0.59	4.55		26.0	-0.15	3.36	3
Q7ZXYV	32.5	1.92 *	0.50 L		28.7	0.89	3.51	4
QB8N22	25.8	-0.26	3.27		26.0	-0.15	1.01	4
RCZ2YD	26.8	0.06	2.61		28.4	0.79	1.85	4
V28PDB	18.9	-2.51 *	1.56		20.6	-2.28 *	1.33	4
V29GAX	29.4	0.91	3.44		28.1	0.65	3.42	4
VNKHGA	30.8	1.37	3.05		30.2	1.47	0.87	4
WM8283	28.4	0.58	0.89		24.5	-0.76	3.44	4
X7EWU7	24.6	-0.65	0.89		25.1	-0.50	0.89	4
XH6NGV	28.2	0.52	2.17		27.4	0.39	1.10	4
ZQC8Q6	23.0	-1.17	3.55		22.8	-1.41	2.55	4

Consensus (All Labs) Results

Month Mean	26.60	Grand Mean	26.39
Avg SD	2.87	Avg SD Months	2.26
SD btwn Labs	3.07	SD btwn Labs	2.56
Labs Incld	26	Labs Incld	26

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Containerboard Interlaboratory Testing Program

Analysis 237

Air Resistance, 42 lb Linerboard - 42D

TAPPI Official Test Method T460

Report #579 (N)
December 2017

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2XAAD3	17.4	-0.33	1.26		17.6	-0.18	0.96	4	LP
67CFXU	19.6	1.18	2.85	H	18.8	0.75	0.53	4	TP
69HZLU	16.8	-0.75	2.42		18.0	0.14	0.87	4	TP
6WMPDM	18.1	0.13	1.03		18.5	0.54	0.43	4	LP
8JMXHT	18.4	0.39	2.37		18.2	0.32	0.32	4	LP
8UMN2F	16.3	-1.12	0.92		16.8	-0.82	0.42	3	LW
8VMG4U	17.6	-0.19	1.35		17.5	-0.25	1.04	4	HG
9KG3CT	20.8	2.01 *	1.27		20.3	1.87	0.44	4	LA
9WRD6P	17.1	-0.52	1.53		17.4	-0.30	1.29	4	GG
JBGVLK	17.0	-0.65	0.86		16.6	-0.93	0.29	3	LA
L7V6YC	19.4	1.08	1.14		18.6	0.62	1.36	4	LA
LB9UEF	18.0	0.09	1.71		17.6	-0.15	0.64	4	LP
LMYNNN	17.6	-0.20	1.63		18.0	0.11	0.52	4	XX
NN6N3U	17.4	-0.33	1.35		17.9	0.04	0.39	4	LP
PPW7EE	17.8	-0.07	0.97		15.3	-1.93 *	5.10 H	4	LA
PVMGQY	18.5	0.45	1.75		17.7	-0.13	0.83	3	LA
PX9D2A	18.1	0.13	1.40		17.1	-0.54	0.82	3	XX
Q7ZXYV	18.4	0.34	3.60	H	18.3	0.34	1.35	4	XX
R6MNJ4	17.5	-0.26	2.12		18.1	0.17	0.61	4	XX
RCZ2YD	15.1	-1.95 *	1.79		17.5	-0.27	1.93	4	LA
RKUX8A	20.5	1.84	1.75		21.0	2.43 *	0.81	4	XX
V28PDB	17.3	-0.42	1.93		18.2	0.30	0.78	4	GA
V29GAX	18.2	0.22	1.99		17.9	0.08	0.66	4	TD
VNKHGA	16.9	-0.70	1.87		15.9	-1.45	0.73	4	LA
W96R29	17.3	-0.39	1.62		17.9	0.07	0.42	4	LA
WM8283	18.9	0.71	0.74	L	17.1	-0.53	1.23	4	XX
X7EWU7	20.3	1.69	1.57		20.2	1.82	0.34	4	LP
ZQC8Q6	14.5	-2.37 *	1.79		15.1	-2.11 *	0.51	4	LA

Consensus (All Labs) Results

Month Mean	17.88	Grand Mean	17.82
Avg SD	1.77	Avg SD Months	1.28
SD btwn Labs	1.44	SD btwn Labs	1.30
Labs Incld	28	Labs Incld	28

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision #4320 Densometer
HG	Technidyne - Hagerty Model #1 and Profile System	LA	L&W Autoline
LP	L&W Air Permeance Tester SE 166	LW	L&W Gurley Densometer, Oil Flotation
TD	TMI Gurley Densometer	TP	Technidyne Profile/ plus Roughness & Porosity
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2LD9TK	62.7	63.1	59.8 L	57.6	60.8	-0.11	2.7	2.6	61.4	0.17	2.3	1.7	16	MB
2XAAD3	62.6	61.7	62.4	62.0	62.2	0.39	3.3	0.4	61.6	0.28	3.3	1.0	16	LC
3VJF7Z	60.7	59.2	60.4	59.1	59.9	-0.45	3.4	0.8	60.0	-0.46	3.1	0.8	16	LC
67CFXU	60.2	60.4	61.1	62.0	60.9	-0.06	3.4	0.8	60.9	-0.06	3.8	1.3	16	LC
6L69KG	62.3	61.3	62.2	60.1	61.5	0.14	2.5	1.0	61.9	0.42	2.9	1.1	16	LD
6WMPDM	64.2	59.8	60.6	60.3	61.2	0.04	2.7	2.0	60.1	-0.44	2.9	2.1	15	LZ
8MQL7W	62.0	61.7	65.1	63.1	63.0	0.70	3.4	1.5	61.8	0.37	3.1	2.7	15	LZ
8UMN2F	53.8 *	55.5	50.9 *H	46.0 X	51.6	-3.51 X	5.2	4.2 H	50.2	-5.06 X	5.1	3.0	11	XX
8UUTLY	56.5	56.8	55.1	56.8	56.3	-1.77	3.1	0.8	58.5	-1.19	3.2	1.9	16	LD
9KG3CT	52.8 *	53.6 *	51.6 *	52.1 X	52.5	-3.15 X	3.0	0.9	53.7	-3.43 X	2.9	2.2	16	LD
AUZYTK	41.0 XH	36.3 X	39.5 X	44.8 XH	40.4	-7.61 X	8.4	3.5 H	58.1	-1.36	6.5	11.2 H	16	LC
B2D8W8	59.4 H	58.9	58.5	59.3	59.0	-0.76	4.7	0.4	58.5	-1.16	4.4	1.3	16	TG
BNBGE9	63.5	62.4	62.6 L	64.5	63.3	0.79	2.7	1.0	63.7	1.25	2.8	1.5	12	TM
CMG9QP	61.4	65.5	66.4	65.4	64.7	1.31	4.1	2.2	62.9	0.87	3.9	1.9	16	LD
F49DKM	58.0	55.4	57.8	57.4	57.1	-1.46	3.6	1.2	60.1	-0.41	3.6	2.5	16	LD
GQZRXN	64.6	62.3	61.7	65.3	63.5	0.88	3.3	1.8	64.1	1.48	3.3	1.3	16	LD
H6UX4N	57.5	59.1	61.2	62.6	60.1	-0.36	3.2	2.3	60.3	-0.34	3.0	1.5	16	EN
HFYN9K	61.1	58.0 L	64.0	62.4	61.4	0.10	3.1	2.5	60.1	-0.40	2.8	1.6	16	LD
JBGVLK	65.7	65.7	64.9	63.9	65.0	1.45	2.6	0.9	65.2	1.96 *	3.6	1.8	12	LC
KNX6RL	64.3	63.6	64.9	63.0	64.0	1.05	3.5	0.8	64.4	1.59	4.2	2.4	16	XX
KU7QEX	58.1	58.0	57.4	60.6 L	58.5	-0.94	2.8	1.4	59.2	-0.84	2.9	1.6	16	LD
LB9UEF	64.6	61.1	59.9	60.5	61.5	0.16	3.1	2.1	60.5	-0.21	3.0	1.5	16	LD
LL6VT6	60.8	60.7	60.7	60.8 H	60.7	-0.13	5.1	0.1 L	60.4	-0.26	3.6	0.2 L	16	LD
LMYNNN	60.4	59.5	59.8	57.2	59.2	-0.70	2.6	1.4	61.3	0.15	2.8	1.7	16	LD
LXM9FF	57.0	56.6	59.6	59.5	58.2	-1.08	3.2	1.6	58.4	-1.23	3.4	2.0	16	LC
NCQTKA	58.7	59.7	58.3	58.6	58.8	-0.84	2.5	0.6	58.8	-1.04	3.1	1.0	16	LC
NJF43K	60.2	60.7	59.9	61.1	60.5	-0.23	2.6	0.5	60.4	-0.26	2.6	0.5 L	16	LC
P7M3ZH	60.8	60.2	61.1	60.6	60.7	-0.16	2.7	0.4	60.5	-0.23	2.6	0.5 L	16	LD
P8X2WC	61.5	61.8	61.8	61.7	61.7	0.22	2.4	0.1 L	61.7	0.34	2.9	0.7 L	16	LD
PQTJ38	52.5 *	60.5	47.2 X	57.3	54.4	-2.48 *	3.2	5.8 H	55.5	-2.56 *	3.3	3.5	15	MB
PVMGQY	61.4	61.0	61.1	61.2	61.2	0.03	2.0	0.2 L	61.3	0.12	2.0	0.4 L	16	LD
PX9D2A	58.1	59.9	60.0	58.8	59.2	-0.70	3.3	0.9	59.3	-0.82	3.6	1.1	15	LZ
Q2HXEA	60.4 L	60.7 L	60.8 L	60.4	60.6	-0.19	1.5	0.2 L	61.5	0.24	1.6	1.5	16	LD
Q7ZXYV	58.2	58.1	57.9	58.9	58.3	-1.04	2.8	0.5	58.3	-1.28	3.2	1.0	16	LZ
RCZ2YD	70.1 *H	61.7 H	66.9 H	64.0 H	65.7	1.69	7.8	3.6 H	62.6	0.73	5.7	4.7	16	LC

Containerboard Interlaboratory Testing Program

Analysis 240

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

TAPPI Official Test Method T809

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
RF6K98	62.1	63.8	71.6 *H	62.3 H	65.0	1.42	5.5	4.5 H	65.0	1.86	5.5	4.5	4	LZ
RGR46Y	63.4	62.3	61.0	62.3	62.2	0.42	3.1	1.0	62.0	0.48	2.9	1.2	16	TU
RJHAMA	58.5	59.2	60.6 L	58.8	59.3	-0.67	2.5	0.9	59.1	-0.90	2.9	1.2	12	LD
RKUX8A	63.2	63.3	65.7	67.2 *	64.8	1.38	3.5	1.9	64.7	1.74	5.1	3.8	16	MB
RLQHTN	57.5	58.4 L	57.5	57.1 L	57.6	-1.27	1.6	0.6	58.9	-0.97	2.0	1.0	16	XX
TMXZNY	68.0 *	66.3 *	66.3	No Data	66.9	2.12 *	5.0	1.0	63.8	1.30	4.9	3.1	15	LC
UD4EV7	63.9 L	60.5	63.2	64.1 L	62.9	0.68	1.7	1.7	63.3	1.09	1.4	1.6	16	TD
UPNEWA	57.5	54.9 *	60.1	60.1	58.2	-1.09	3.4	2.5	58.9	-1.00	3.2	2.1	16	LC
VNKHGA	65.6 H	65.9 H	67.3 H	65.7 H	66.1	1.85	7.8	0.8	63.4	1.13	5.5	4.3	16	XX
X2GB4N	60.8	61.1	60.9	60.6	60.8	-0.10	3.2	0.2 L	61.0	0.02	2.8	1.4	16	TH
X7EWU7	59.5	58.0	59.8	58.0	58.8	-0.84	3.0	0.9	59.9	-0.51	3.7	1.5	8	LD
Z4LLAQ	83.9 X	74.4 XH	70.7 *H	76.1 X	76.3	5.59 X	6.5	5.6 H	72.4	5.35 X	5.5	8.4 H	16	MB
Z4YABH	61.1	60.9	62.4	59.7	61.0	-0.04	2.6	1.1	59.7	-0.61	2.9	1.6	16	TH
ZLFJAX	62.2	63.2	63.1	62.7	62.8	0.62	3.5	0.4	63.0	0.92	3.5	1.5	8	LD

Consensus (All Labs) Results

Wk Mean	60.84	60.46	61.42	61.01	Month Mean	61.10	Grand Mean	61.00
Avg SDr	3.59	3.45	3.89	3.62	Avg SD	3.55	Avg SD	3.53
SD btwn Labs	3.53	2.84	3.95	2.59	SD btwn Labs	2.72	SD btwn Labs	2.13
Labs Incld	47	47	47	44	SD btwn Wks	1.76	SD btwn Wks	2.61
Labs Excld	2	2	2	4	Labs Incld	45	Labs Incld	46
Labs not Rcvd	0	0	0	1				

Key to Instrument Codes Reported by Participants

EN	Emerson 2200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	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	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 250

Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium - CM91

TAPPI Official Test Method T843

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2XAAD3	73.6	71.7	74.0	71.9	72.8	-0.74	1.9	1.2	73.7	-0.16	2.8	1.7	16	XX
67CFXU	79.5 X	76.7	76.9	78.6	77.9	1.81	2.5	1.4	77.7	1.71	2.4	1.0	16	LC
8MQL7W	74.5	75.4	74.4	74.7	74.8	0.24	3.2	0.5	73.4	-0.30	2.8	2.0	15	LZ
9KG3CT	72.9	74.4	73.1	73.2	73.4	-0.45	2.5	0.7	73.6	-0.20	2.2	0.9	16	LD
LB9UEF	75.8 *	76.0	76.8	77.7	76.6	1.15	2.5	0.8	76.4	1.12	2.5	1.0	16	LD
LMYNNN	73.0	71.8	73.3	71.6	72.4	-0.94	2.6	0.8	72.9	-0.53	2.5	1.2	16	XX
NJF43K	73.3	72.9	73.7	74.1	73.5	-0.39	2.8	0.5	73.6	-0.19	3.4	0.9	8	LD
P8X2WC	71.6	72.8	72.4	73.1	72.5	-0.90	2.6	0.6	72.7	-0.63	2.0	0.7	16	LD
PVMGQY	73.7	72.4	73.4	73.2	73.2	-0.54	2.4	0.6	72.7	-0.61	2.3	0.7	16	LD
PX9D2A	74.0	77.2	73.0	76.5	75.2	0.45	2.8	2.0	75.3	0.59	2.5	1.7	15	LZ
Q2HXEA	73.3	73.2 L	73.6 L	73.4 L	73.4	-0.45	1.0	0.2 L	73.2	-0.37	1.5	0.6 L	16	LD
R6MNJ4	74.6	74.0	73.9	70.7	73.3	-0.49	1.9	1.7	73.7	-0.15	1.7	1.1	16	XX
RCZ2YD	59.9 X	58.3 X	55.9 XH	57.9 XH	58.0	-8.12 X	4.3	1.6	69.6	-2.06 *	5.4	8.2 H	16	XX
UD4EV7	72.3	72.8	71.2	73.6	72.5	-0.91	1.3	1.0	73.0	-0.48	1.1	1.3	16	TD
X7EWU7	77.5 X	80.5 X	77.2	79.8	78.8	2.23 *	2.2	1.6	78.6	2.14 *	2.5	1.3	8	LD
Z4LLAQ	65.1 XH	64.5 X	65.8 XH	66.0 *	65.4	-4.45 X	3.8	0.7	63.8	-4.76 X	3.2	4.8 H	16	MB
ZLFJAX	74.4	74.1	74.8	73.1	74.1	-0.09	2.1	0.7	74.2	0.11	2.2	0.7	8	LD

Consensus (All Labs) Results

Wk Mean	73.62	73.96	74.10	73.81	Month Mean	74.28	Grand Mean	74.01
Avg SDr	2.17	2.46	2.49	2.40	Avg SD	2.36	Avg SD	2.66
SD btwn Labs	1.09	1.77	1.71	3.30	SD btwn Labs	2.00	SD btwn Labs	2.14
Labs Incld	13	14	15	16	SD btwn Wks	1.08	SD btwn Wks	2.35
Labs Excld	4	3	2	1	Labs Incld	15	Labs Incld	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
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TD	TMI Digital Crush Tester, Model 17-09	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - CM91

TAPPI Official Test Method T822

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
67CFXU	46.4	45.9	44.2	44.9	45.3	0.25	2.8	1.0	45.9	0.60	2.8	1.0	16	LC
6L69KG	47.2	46.9	46.8	47.1	47.0	0.86	1.9	0.2	45.2	0.36	2.4	2.1	16	LD
8UMN2F	44.4	48.7	47.2	44.2	46.1	0.53	2.1	2.2 H	46.3	0.73	2.5	1.5	11	XX
9KG3CT	46.2	45.6	45.4	46.6	46.0	0.48	2.7	0.5	45.7	0.54	3.1	0.7 L	16	LD
9ZTJLF	45.6	45.3	46.5	47.2	46.1	0.55	2.2	0.9	46.3	0.73	2.5	1.3	16	LZ
AUZYTK	32.1 *	32.1 X	31.7 X	32.8 X	32.2	-4.67 X	1.7	0.5	33.8	-3.32 X	2.4	1.2	16	XX
BNBGE9	50.1	49.0	47.4	49.2	48.9	1.58	2.0	1.1	49.3	1.70	2.3	1.2	12	LD
CMG9QP	44.5	45.1	47.0	46.2	45.7	0.39	2.3	1.1	45.7	0.52	2.1	0.9	16	LD
HCVZKH	44.6	45.5	44.6	44.6	44.8	0.06	1.9	0.5	42.8	-0.41	2.0	1.4	16	TH
HFYN9K	43.2	43.6	41.7	43.2	42.9	-0.65	2.6	0.8	43.8	-0.09	2.3	1.1	16	LZ
JBGVLK	50.1	50.3	51.4 XL	51.1 *	50.7	2.25 *	1.6	0.6	50.4	2.06 *	1.6	0.6 L	12	LD
KU7QEX	42.8	45.8	44.2	48.1	45.2	0.21	2.4	2.3 H	44.3	0.08	2.3	1.7	16	LD
LB9UEF	44.9	45.5	44.8	44.3	44.9	0.07	2.3	0.5	45.8	0.56	2.1	0.8	16	LD
LL6VT6	44.0	44.1	44.2	44.1	44.1	-0.22	2.4	0.1 L	43.5	-0.18	4.9	0.4 L	16	LD
LMYNNN	42.4 H	43.2	43.2	40.7 H	42.4	-0.86	3.8	1.2	42.6	-0.48	3.5	1.0	16	LD
NCQTKA	47.7	48.6	46.0	47.8 H	47.5	1.06	3.2	1.1	46.3	0.71	3.2	1.6	16	LC
PVMGQY	43.8	42.8	43.4	43.0	43.2	-0.53	2.5	0.5	43.0	-0.34	2.4	0.5 L	16	LD
Q7ZXYV	39.5	41.2	42.4	42.9	41.5	-1.19	3.0	1.5	43.2	-0.29	2.3	1.4	16	EM
R3ABJD	42.7	No Data	No Data	44.4	43.6	-0.42	2.5	1.2	39.7	-1.41	2.8	2.4	13	LZ
RGR46Y	37.4	39.3 *	39.7 *	40.1	39.1	-2.07 *	2.4	1.2	38.7	-1.75	2.2	1.1	16	TU
TMXZNY	44.8	45.1	45.0	44.0	44.7	0.02	2.7	0.5	44.9	0.27	3.0	1.0	16	LD
VTEE62	41.7	41.9	43.7	42.6 L	42.5	-0.82	1.3	0.9	42.5	-0.52	1.2	1.0	16	WK
X2GB4N	41.5	40.1	40.8	39.4	40.5	-1.57	2.0	0.9	39.6	-1.44	2.2	1.4	16	TH
Z4LLAQ	33.4 *H	34.5 X	31.8 X	31.9 X	32.9	-4.39 X	3.1	1.3	38.0	-1.96 *	2.9	12.2 H	16	MB

Consensus (All Labs) Results

Wk Mean	43.37	44.92	44.39	44.80	Month Mean	44.67	Grand Mean	44.06
Avg SDr	2.33	2.49	2.48	2.61	Avg SD	2.44	Avg SD	2.64
SD btwn Labs	4.38	2.89	2.14	2.92	SD btwn Labs	2.68	SD btwn Labs	3.09
Labs Incld	24	21	20	22	SD btwn Wks	1.08	SD btwn Wks	2.83
Labs Excld	0	2	3	2	Labs Incld	22	Labs Incld	23
Labs not Rcvd	0	1	1	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
TU	TMI Universal Crush Tester (TMI K440)	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM91

TAPPI Official Test Method T826

Report #579 (N)
December 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
3VJF7Z	15.1	14.8	14.7	14.9	14.9	0.54	0.8	0.2	15.1	0.66	1.0	0.3	16	LW
67CFXU	14.9	14.7	14.9	14.7	14.8	0.32	1.0	0.1	14.7	-0.03	1.0	0.2 L	16	LU
6L69KG	14.9	15.1	15.1	15.2	15.1	1.05	0.8	0.1	15.1	0.68	0.9	0.2 L	16	LH
6WMPDM	13.9 H	14.6	14.6	14.8	14.5	-0.52	1.1	0.4	14.5	-0.52	1.0	0.3	15	LB
8UMN2F	13.2 *L	14.5 L	14.2 L	13.8 *L	13.9	-1.93 *	0.0	0.6	14.2	-1.15	0.1	0.4	12	XX
8UUTLY	14.6	15.0	14.4	14.3	14.6	-0.24	1.0	0.3	14.4	-0.77	1.0	0.3	16	LU
9KG3CT	15.1	14.7	14.9	14.8	14.9	0.55	0.9	0.2	15.0	0.41	0.9	0.3	16	LA
9ZTJLF	14.6	14.6	14.7	15.0	14.7	0.08	1.0	0.2	14.8	0.00	1.1	0.3	16	LA
BNBGE9	15.5	15.4 *	15.0	14.6	15.1	1.15	1.0	0.4	15.5	1.38	1.1	0.5	12	LA
ERH9TQ	15.0	14.8	14.7	15.1	14.9	0.60	0.8	0.2	14.9	0.24	0.9	0.5	16	LA
JBGVLK	15.7 *	15.5 *L	15.0	14.9	15.3	1.52	0.9	0.4	15.4	1.16	0.8	0.4	12	LA
KNX6RL	14.4	14.5	14.0	14.3 L	14.3	-0.95	0.8	0.2	14.0	-1.44	0.9	0.3	16	XX
KU7QEX	15.5 L	16.3 X	14.9	15.9 X	15.6	2.46 *	1.1	0.6	15.0	0.45	1.0	0.7	16	LZ
LB9UEF	14.1	14.1	14.2	14.0	14.1	-1.42	1.0	0.1	14.3	-0.95	0.9	0.2 L	16	LZ
NJF43K	13.9	14.3	14.8	14.9	14.5	-0.50	0.9	0.5	14.5	-0.51	0.9	0.3	16	LB
P7M3ZH	14.6	14.8	14.2	15.0	14.6	-0.06	0.9	0.4	14.5	-0.45	0.9	0.3	16	LB
PGJD4J	16.8 X	16.2 XL	16.6 X	17.0 X	16.6	5.02 X	0.9	0.3	16.0	2.36 *	1.3	0.5	16	LH
PQTJ38	14.3	14.2	15.7 *	14.6	14.7	0.10	1.0	0.7 H	14.3	-0.95	1.0	0.5	15	LA
PVMGQY	14.6	14.5	14.4	14.5	14.5	-0.43	1.0	0.1	14.4	-0.67	1.0	0.2 L	16	LB
Q2HXEA	14.4 L	14.6 L	14.7 L	14.3 L	14.5	-0.44	0.4	0.2	14.4	-0.60	0.5	0.2 L	16	LA
Q7ZXYV	14.3	14.4	14.1 L	14.4	14.3	-0.94	0.9	0.2	14.5	-0.48	1.0	0.4	16	LZ
RF6K98	25.8 XL	23.5 XL	24.3 XL	24.6 XL	24.5	25.15 X	0.4	1.0 H	26.4	22.68 X	0.6	2.1 H	8	LA
RKUX8A	22.6 XL	23.0 XL	23.5 XL	23.5 XL	23.1	21.56 X	0.4	0.4	15.9	2.18 *	0.2	4.4 H	16	BK
Z4YABH	14.4	14.5	14.0	14.6	14.4	-0.77	0.7	0.3	14.5	-0.45	0.7	0.2 L	16	TT
ZLFJAX	14.4	14.8	14.7	14.5	14.6	-0.17	1.0	0.2	14.5	-0.54	0.9	0.2 L	8	LB

Consensus (All Labs) Results

Wk Mean	14.60	14.67	14.62	14.63	Month Mean	14.66	Grand Mean	14.75
Avg SDr	0.91	0.89	0.90	0.88	Avg SD	0.90	Avg SD	0.91
SD btwn Labs	0.58	0.34	0.42	0.37	SD btwn Labs	0.39	SD btwn Labs	0.51
Labs Incld	22	21	22	21	SD btwn Wks	0.33	SD btwn Wks	0.96
Labs Excld	3	4	3	4	Labs Incld	22	Labs Incld	24
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

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