Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #595 (D) - April 2019

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX13	Box Compression Strength, Corrugated Boxes
202	EC11	Edgewise Compressive Strength, Wax (T811), Corrugated Board
203	EC11	Edgewise Compressive Strength by Clamp (T839), Corrugated Board
205	42F1	Mullen Burst of Linerboard, 42 lb Linerboard
207	35E1	Mullen Burst of Linerboard, 35 lb Linerboard
215	42F1	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
217	35E1	Ring Crush of Linerboard, Rigid Platen Type, 35 lb Linerboard
223	42F1	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	CM11	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM11	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM11	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM11	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	CM11	April 2019-Current
	CM92	January 2018-March 2019
35 lb Linerboard	35E1	June 2017-Current
42 lb Linerboard	42F1	January 2019-Current
	42D3	November 2017-December 2018
56 lb Linerboard	56A2	January 2018-Current
	56A1	July 2016-November 2017

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'.
Labs Incld	-	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:

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
4PTUXH	928.6	0.88	45.64		879.3	0.25	38.30	4	LS
69A38J	894.7	0.31	18.39		905.5	0.74	15.47	4	LM
79PMDF	950.6	1.24	14.47		941.0	1.41	19.31	4	TE
83AN38	861.3	-0.24	46.49		832.3	-0.64	40.91	2	LL
BEC8HP	860.0	-0.26	26.12		849.1	-0.32	40.10	4	LG
BKFB74	869.2	-0.11	16.84		885.4	0.36	33.21	3	LM
CF2RPL	936.2	1.00	15.59		879.3	0.25	43.09	4	ER
DDB6E6	868.6	-0.12	47.70		837.2	-0.55	26.89	4	LS
GXNZU7	884.8	0.15	35.05		869.0	0.05	22.42	2	LS
JDCW3E	828.0	-0.79	54.60		852.5	-0.26	26.08	4	ER
KUX2MD	929.6	0.89	15.73		897.4	0.59	26.95	4	ES
L9CHCV	914.2	0.64	45.04		876.0	0.19	27.53	4	LG
N3J2WM	841.0	-0.58	35.24		796.7	-1.31	144.30 H	3	EX
NQ72ZT	967.0	1.52	41.33		955.6	1.69	28.63	4	LG
NUY3YM	864.8	-0.18	64.64		824.6	-0.78	46.42	3	EX
R684U6	866.6	-0.15	53.56		878.7	0.24	17.11	2	EX
RMCEVV	746.1	-2.15 *	48.53		751.6	-2.16 *	39.03	4	LS
T97HCT	859.4	-0.27	4.77	L	912.5	0.88	76.39	4	LS
TPR7GG	834.4	-0.69	66.04		863.0	-0.06	34.56	4	LL
WY3TRR	846.3	-0.49	19.19		875.4	0.18	61.98	4	LG
WZJU6F	726.1	-2.49 *	30.62		744.6	-2.30 *	19.75	4	LS
X74DJF	954.6	1.31	54.76		942.5	1.44	42.85	4	ER
XLHEHR	953.0	1.28	71.88		939.1	1.38	19.62	2	TB
XLWW9Q	877.8	0.03	11.28		884.5	0.35	13.88	4	ET
YVW8RK	935.0	0.98	78.77		856.8	-0.18	54.59	4	ET
ZV97MU	795.3	-1.34	51.40		795.3	-1.34	0.00	1	LS
ZZQALC	852.7	-0.38	60.75		861.0	-0.10	18.04	4	ER

Consensus (All Labs) Results

Month Mean	875.77	Grand Mean	866.14
Avg SD	44.57	Avg SD Months	45.70
SD btwn Labs	60.18	SD btwn Labs	52.93
Labs Incld	27	Labs Incld	27

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	873.43	78.39	2.34	10
Clip sealing	877.15	49.23	1.38	17

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	LS	Lansmont Squeezer
TB	TMI Monitor/Compression Tester, Model 17-70	TE	Testometric M500 - 25 KN

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
83AN38	92.0	15.60 X	2.65		92.0	15.94 X	0.00	1	XX
A4TL7F	38.8	-0.80	1.14		39.4	-0.58	0.64	4	TD
BEC8HP	44.2	0.87	1.50		44.4	1.02	1.20	4	TH
DDB6E6	37.5	-1.19	2.23		38.3	-0.90	3.10	4	LD
E7R322	45.8	1.36	1.77		44.2	0.93	1.31	4	LC
GPUWL4	37.2	-1.29	1.81		35.6	-1.76	1.72	4	TX
HB73F3	40.0	-0.43	3.88	H	39.5	-0.55	2.77	4	XX
JDCW3E	37.5	-1.21	3.19		37.7	-1.10	0.52	4	EN
L9CHCV	44.1	0.83	2.39		43.9	0.84	0.39	4	LE
NQ72ZT	45.9	1.39	1.21		45.9	1.47	0.00	1	EM
R684U6	40.6	-0.24	3.16		40.7	-0.17	0.73	4	LC
RMCEVV	28.4	-4.01 X	2.04		29.2	-3.78 X	1.31	4	EM
WG9WQQ	41.8	0.11	3.33		41.6	0.12	2.35	4	LD
WZJU6F	43.3	0.60	1.92		43.3	0.66	1.16	4	LC

Consensus (All Labs) Results

Month Mean	41.38	Grand Mean	41.20
Avg SD	2.45	Avg SD Months	1.70
SD btwn Labs	3.24	SD btwn Labs	3.19
Labs Incld	12	Labs Incld	12

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

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2YER8D	41.4	-1.42	1.06		42.2	-1.28	1.24	4	LD
3CYU3B	47.8	1.14	2.42		46.1	0.85	1.50	4	TG
3RMZ4P	44.7	-0.10	0.92		47.3	1.49	1.84	4	TD
69A38J	44.0	-0.37	0.80		43.8	-0.41	1.08	4	EM
79PMDF	43.2	-0.71	0.94		45.2	0.37	1.49	4	LD
88LMNY	44.3	-0.28	1.30		42.1	-1.35	1.77	4	LC
A4TL7F	40.5	-1.78	0.97		40.5	-2.23 *	0.45	4	TD
AX9ALL	41.9	-1.20	2.37		42.9	-0.92	0.83	3	LD
BEC8HP	46.1	0.44	0.83		45.8	0.66	1.11	4	TH
BKFB74	45.0	0.01	2.09		46.1	0.84	1.55	2	TG
CF2RPL	45.8	0.32	1.19		45.3	0.38	0.78	4	LD
DDB6E6	44.4	-0.24	1.20		44.7	0.08	0.26	4	LD
DF34M3	47.6	1.03	1.38		47.5	1.63	1.98	4	EM
E7R322	46.1	0.47	2.11		45.8	0.68	0.58	4	LC
GPUWL4	42.2	-1.12	1.49		38.6	-3.26 X	6.81 H	4	TX
GXNZU7	42.2	-1.09	1.14		44.4	-0.10	1.91	3	LD
J2BKEZ	45.3	0.13	0.87		45.1	0.30	0.26	4	EM
JDCW3E	43.6	-0.54	1.91		42.2	-1.28	1.94	4	EN
JNQ6CZ	50.5	2.18 *	1.90		46.9	1.29	2.71	4	LD
KTZN6R	43.0	-0.80	1.19		42.6	-1.08	0.61	3	EM
KUX2MD	45.1	0.05	1.24		44.7	0.10	0.86	4	LD
L9CHCV	45.8	0.32	1.64		45.1	0.28	1.38	4	LY
N3J2WM	48.9	1.56	2.71		47.7	1.71	1.68	2	CT
R684U6	42.5	-0.97	2.05		42.0	-1.41	0.75	4	LC
R9P2JK	49.0	1.60	4.02 H		45.8	0.69	2.29	4	TD
RMCEVV	44.1	-0.36	0.95		43.4	-0.62	1.35	4	EM
T97HCT	49.9	1.97 *	1.45		51.0	3.53 X	1.69	4	TB
TPR7GG	44.0	-0.39	1.09		45.5	0.50	1.21	4	LC
TRKU4J	44.8	-0.07	1.77		45.4	0.48	1.03	4	LD
U94BKK	46.3	0.53	1.01		46.3	0.95	0.00	1	TD
VAEC8J	42.1	-1.15	1.31		42.4	-1.19	1.21	4	TK
WG9WQQ	42.1	-1.15	1.30		42.0	-1.40	1.25	4	LD
WY3TRR	48.4	1.36	1.91		47.1	1.40	1.11	4	TJ
WZJU6F	45.0	0.00	2.45		45.0	0.25	1.32	4	LC
X74DJF	44.6	-0.15	1.38		43.7	-0.48	0.94	4	EM
XGMMCF	46.5	0.62	2.17		45.5	0.53	1.47	4	XX
XLHEHR	49.4	1.75	0.43 L		52.0	4.06 X	2.37	4	LD
XLWW9Q	42.5	-0.98	1.04		43.0	-0.87	0.49	4	EM
YVW8RK	42.5	-1.00	1.77		44.4	-0.10	1.43	4	TD

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
ZZQALC	46.0	0.40	2.85	H	43.2	-0.77	2.08	4	LC

Consensus (All Labs) Results

Month Mean	44.96	Grand Mean	44.56
Avg SD	1.71	Avg SD Months	1.39
SD btwn Labs	2.51	SD btwn Labs	1.83
Labs Incld	40	Labs Incld	37

Key to Instrument Codes Reported by Participants

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
TB	TMI Monitor/Compression Tester, Model 17-70	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Digital Crush Tester, 17-76	TH	TMI Monitor/Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TK	TLS Compression Tester, Model 5184
TX	TMI (model not specified)	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
292NCK	111.7	108.4	107.9	113.2	110.3	0.08	10.0	2.6	109.4	-0.28	9.4	2.1	16	TB
38NGKC	107.8 L	107.3 L	106.7 L	108.2 L	107.5	-0.60	3.5	0.6	107.7	-0.73	3.3	0.8 L	16	LA
3F94YL	109.3	110.0	112.1	106.6	109.5	-0.12	7.4	2.3	109.5	-0.27	7.4	2.3	4	LC
3T6XN3	107.4	103.3	100.7 *	108.0	104.8	-1.24	9.5	3.5	107.7	-0.74	9.9	4.3	16	LC
6RJ4ZW	108.1	105.7	106.8	107.5	107.0	-0.71	7.6	1.0	108.7	-0.48	8.8	3.0	16	LC
77XMEJ	106.6	112.1	113.0	111.9	110.9	0.22	8.9	2.9	108.9	-0.42	9.8	3.0	16	LC
7969KV	111.1	101.9	106.6	106.8	106.6	-0.82	7.9	3.8	106.2	-1.12	8.6	3.1	16	LA
7AYW27	111.2	116.4	110.8	109.8	112.0	0.50	8.6	2.9	113.2	0.69	10.5	3.6	12	LA
88LMNY	111.6	108.9	111.8	114.6	111.7	0.42	8.7	2.3	112.4	0.49	9.5	2.4	16	LA
98JC8M	No Data	115.6	112.4	110.9	113.0	0.72	10.4	2.4	111.4	0.21	9.7	2.9	14	TB
9ZJQH8	103.0	102.5	98.4 *	99.6 *	100.9	-2.20 *	8.1	2.3	103.0	-1.94 *	8.1	3.2	12	AH
A4TL7F	113.6 H	110.8	115.6	113.7	113.4	0.83	11.8	2.0	120.6	2.60 *	10.4	14.1 H	16	XX
AHD426	110.4	110.8	110.8	113.6	111.4	0.34	6.3	1.5	112.7	0.55	5.6	2.6	16	RE
AX9ALL	103.2	110.9	109.9	105.1	107.3	-0.65	9.2	3.7	106.2	-1.13	8.7	2.6	16	LC
AZ3VFC	110.0	111.4	109.4	108.6	109.9	-0.03	8.6	1.2	108.9	-0.42	7.8	1.6	16	TP
C8AACY	109.6	108.4	No Data	104.5	107.5	-0.60	8.2	2.7	106.3	-1.09	9.0	4.0	15	LJ
CF2RPL	107.6	114.2	112.6	106.9	110.3	0.08	10.4	3.6	112.3	0.44	9.1	3.3	16	AH
D87AMH	108.0	104.7	111.9	109.9	108.6	-0.33	9.9	3.1	107.2	-0.86	9.8	2.6	16	LC
DDB6E6	102.1	108.1	107.6	102.3	105.0	-1.19	8.2	3.2	105.1	-1.39	8.4	2.5	16	LA
ENA4UH	121.5 *	119.5 *	119.5 *	115.9	119.1	2.20 *	8.5	2.3	117.7	1.84	9.2	3.4	16	AH
FN3JHY	119.2 *L	106.6	112.4	102.9	110.3	0.07	8.8	7.2 H	110.6	0.02	9.4	3.9	16	LA
FZYPBX	117.1	110.5 H	114.4	112.0	113.5	0.85	11.8	2.9	110.8	0.06	11.3	4.3	16	LZ
HAW4CL	111.3	105.3	107.3	105.6	107.4	-0.63	10.9	2.7	107.6	-0.76	10.1	2.3	12	LC
HQ37AU	110.4	111.3	111.1	110.7	110.9	0.22	5.8	0.4 L	110.6	0.02	5.3	0.3 L	16	LJ
JCV3ZJ	108.2	108.5	109.6	104.9	107.8	-0.53	8.0	2.0	108.9	-0.43	9.5	2.3	16	LA
JJGVD6	117.2 L	111.8	112.6	111.0	113.1	0.76	8.5	2.8	113.2	0.67	9.3	2.9	15	LC
JNQ6CZ	113.3	112.6	112.9	112.1	112.7	0.67	6.8	0.5 L	112.7	0.55	7.2	0.6 L	16	LA
JU27MW	99.6 *	97.4 *	98.3 *	100.1 *	98.8	-2.69 *	6.3	1.3	107.3	-0.85	4.8	5.1	16	LA
JVUVAX	107.9	112.2	110.0	107.5	109.4	-0.14	7.6	2.2	109.7	-0.22	8.8	2.7	12	LC
KUX2MD	110.0	112.1	107.0	111.9	110.3	0.07	10.7	2.4	109.6	-0.23	10.2	3.8	16	LA
L9CHCV	119.0	115.8 H	117.3	119.3 *	117.9	1.90	11.4	1.6	116.4	1.51	12.1	3.2	16	LZ
LYHBH4	107.9	109.3	115.1	116.3	112.2	0.53	7.8	4.2	113.4	0.74	8.8	4.8	16	LC
MEDZ4R	110.5 H	110.7	109.7	113.1	111.0	0.25	9.8	1.5	110.8	0.06	9.1	2.3	16	LC
N3J2WM	114.8	108.2	107.5	108.3	109.7	-0.07	10.8	3.4	110.6	0.02	10.5	3.3	12	XX
NM7LTQ	106.6	106.2	104.1	105.8	105.7	-1.04	8.7	1.1	106.7	-0.99	8.6	2.0	16	LA

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42F1

TAPPI Official Test Method T807

Report #595 (D)
April 2019

	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
NQZR4M	106.4	113.2	106.0	107.5	108.3	-0.41	10.2	3.3	110.8	0.07	9.7	2.8	16	LJ
NUY3YM	107.6	113.0	111.2	112.6 H	111.1	0.27	10.9	2.5	110.2	-0.08	11.5	3.8	16	AH
PUYF4U	117.6	116.8	124.5 X	123.0 X	120.5	2.53 *	9.0	3.8	120.1	2.48	*10.0	2.8	15	LA
PZ6YK8	101.3 H	106.3	104.7	104.2	104.1	-1.41	10.3	2.1	105.1	-1.40	8.7	3.3	16	LC
Q2X87W	109.4	108.3	109.6	110.0	109.3	-0.16	6.8	0.7	108.4	-0.56	6.8	1.1	16	AH
QNDMTU	115.1	113.6	114.2	111.6	113.6	0.88	10.0	1.5	111.9	0.35	8.5	3.0	16	LA
R2VWPJ	115.2	113.1	114.8	117.1	115.1	1.22	8.3	1.6	117.2	1.72	9.3	3.4	16	LC
R8VFN9	112.4	106.6	115.4	112.2	111.7	0.40	11.8	3.7	111.1	0.15	10.2	4.0	16	AH
TRKU4J	106.4	118.9	112.8	106.8	111.2	0.30	6.9	5.9	110.5	-0.02	11.2	6.7	16	LC
TWV8LH	113.7 L	109.1 L	111.0	110.9	111.2	0.29	3.8	1.9	112.1	0.39	5.7	2.4	15	XX
VFWYKV	90.2 X	98.8 *	108.5	108.0	101.4	-2.08 *	8.7	8.7 H	108.6	-0.50	8.4	6.5	16	AA
VVR66C	107.3	111.7	104.7	104.2	107.0	-0.73	10.3	3.4	107.7	-0.74	9.0	2.4	16	LC
WG9WQQ	110.3	109.2	109.6	106.2	108.9	-0.27	7.7	1.8	108.5	-0.52	7.2	1.9	16	LA
WZ4PBN	124.4 X	120.2 *	122.9 *	111.7	119.8	2.37 *	8.4	5.7	117.3	1.74	10.3	3.6	16	LZ
WZJU6F	108.5	101.9	110.8	109.4	107.7	-0.56	9.3	3.9	107.0	-0.91	8.2	2.7	16	AH
XKNTME	110.2 L	108.4	116.7	110.8	111.5	0.37	5.2	3.6	111.4	0.22	5.7	2.1	15	LC
YRHBLN	101.3	113.1	114.2 H	113.7	110.6	0.15	11.1	6.2	112.5	0.50	9.8	4.8	16	AX
ZJ4MMF	110.3	112.4	110.6	107.7	110.3	0.07	7.7	2.0	107.7	-0.74	8.9	2.8	16	LB
ZQ4BV8	113.2	107.9	107.9	109.3	109.6	-0.10	11.8	2.5	120.3	2.52	*9.3	7.1	16	XX
ZZQALC	107.3	114.6	104.6	109.5	109.0	-0.24	8.1	4.2	107.3	-0.84	8.4	3.3	16	LZ

Consensus (All Labs) Results

Wk Mean	110.01	109.94	110.26	109.31	Month Mean	109.98	Grand Mean	110.54
Avg SDr	9.16	8.73	9.04	8.95	Avg SD	8.96	Avg SD	8.98
SD btwn Labs	4.70	4.77	4.71	4.13	SD btwn Labs	4.14	SD btwn Labs	3.87
Labs Incld	52	55	53	54	SD btwn Wks	3.24	SD btwn Wks	3.84
Labs Excld	2	0	1	1	Labs Incld	55	Labs Incld	55
Labs not Rcvd	1	0	1	0				

Key to Instrument Codes Reported by Participants

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

	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
292NCK	95.6	88.8	91.2	94.2	92.4	0.07	7.6	3.1	91.3	-0.40	7.9	3.3	12	TB
38NGKC	92.7 L	91.2 L	91.8	92.3	92.0	-0.08	3.3	0.6	92.2	-0.10	3.1	0.8 L	12	LA
3F94YL	87.1	92.3	91.9	90.9	90.6	-0.54	6.8	2.4	90.6	-0.64	6.8	2.4	4	LC
3T6XN3	91.6	84.5	89.7 L	89.5	88.8	-1.11	5.7	3.0	91.3	-0.39	8.5	4.8	12	LA
6RJ4ZW	96.8	91.0	91.3	85.0 *	91.0	-0.39	10.1	4.8	93.3	0.28	8.9	4.2	8	LC
77XMEJ	90.5	89.1	90.1	90.2	89.9	-0.75	7.6	0.6	90.3	-0.72	7.8	1.4	8	LC
7969KV	88.3	89.2	87.8	86.6	88.0	-1.39	5.3	1.1	87.7	-1.62	6.0	2.2	12	LA
7AYW27	94.3	96.3	95.6	93.8	95.0	0.90	8.0	1.2	95.0	0.87	8.0	1.2	4	LA
88LMNY	96.1	100.5 *	93.5	93.6	95.9	1.20	8.3	3.3	93.7	0.41	8.6	4.1	12	LA
98JC8M	No Data	93.9	95.0	96.4	95.1	0.94	10.1	1.2	94.6	0.75	8.4	2.3	11	TB
9ZJQH8	90.5	88.3	83.0 *	85.8	86.9	-1.74	8.7	3.2	90.2	-0.76	7.3	3.6	12	AH
A4TL7F	93.8 H	91.3	91.1 H	89.1	91.3	-0.30	12.9	1.9	99.8	2.49	*11.6	9.4 H	8	XX
AHD426	95.6	96.2	95.6	96.8	96.1	1.24	4.8	0.6	95.6	1.07	5.0	1.1	12	RE
AX9ALL	88.5	92.0	92.0	93.0	91.3	-0.29	7.7	2.0	91.1	-0.47	7.8	2.2	12	LC
AZ3VFC	91.2	90.1	90.3	89.6	90.3	-0.63	6.3	0.7	89.0	-1.16	6.3	1.3	12	TP
C8AACY	90.8	91.7	No Data	88.3	90.3	-0.64	7.9	1.8	89.7	-0.93	8.0	1.8	11	LJ
CF2RPL	93.4	98.0	96.2	91.2	94.7	0.80	7.9	3.0	94.5	0.68	7.9	2.7	12	AH
D87AMH	87.5	88.9	89.3	91.7	89.4	-0.93	6.4	1.7	91.0	-0.49	8.5	3.5	12	LC
DDB6E6	91.2	88.2	90.4	88.0	89.5	-0.90	8.0	1.6	89.1	-1.15	8.8	1.7	12	LA
ENA4UH	99.1	107.1 X	105.9 X	104.9 X	104.3	3.91 X	7.3	3.5	101.3	3.01 X	7.2	3.4	12	AH
FN3JHY	91.1	90.0	87.6	94.0	90.7	-0.50	9.3	2.6	90.9	-0.54	8.7	1.8	12	LA
FZYPBX	89.8	93.8	93.9	95.6	93.3	0.33	9.2	2.5	93.0	0.21	10.3	2.3	12	LZ
HAW4CL	89.2	92.2	88.6	89.0	89.8	-0.81	8.2	1.6	88.7	-1.25	8.2	1.9	8	LC
HQ37AU	91.2	91.4	91.6	91.2 L	91.3	-0.30	4.5	0.2 L	91.1	-0.45	3.9	0.4 L	12	LJ
JCV3ZJ	87.9	86.6	91.7	86.3	88.1	-1.33	7.1	2.5	90.6	-0.63	7.6	3.6	12	LA
JJGVD6	95.4	90.5	100.8 *	93.3	95.0	0.90	8.9	4.3	94.1	0.57	8.7	4.7	11	LC
JNQ6CZ	93.4	92.6	93.1	93.2	93.1	0.27	5.4	0.3 L	92.9	0.16	5.6	0.4 L	12	LA
JU27MW	87.2	88.6	91.7 L	89.1	89.1	-1.00	3.8	1.9	91.2	-0.43	5.4	2.0	12	LA
JVUVAX	88.7	93.0	98.6	93.2	93.4	0.37	8.6	4.1	93.0	0.18	8.7	3.0	12	LC
KUX2MD	97.6	98.0	97.0	86.8	94.9	0.85	7.2	5.4 H	91.4	-0.37	8.5	4.5	12	LA
L9CHCV	94.2	93.7	98.2	93.5	94.9	0.86	8.9	2.2	96.5	1.38	8.8	2.3	12	LZ
LYHBH4	91.6	92.8	95.2	92.6 L	93.0	0.25	6.9	1.5	98.2	1.96 *	8.7	6.4	12	LC
MEDZ4R	90.3	90.0	95.2	94.4	92.4	0.07	9.2	2.7	91.5	-0.31	8.9	2.5	12	LC
N3J2WM	96.6	94.0	88.5	93.6	93.2	0.31	9.8	3.4	94.0	0.54	9.5	2.9	8	XX
NM7LTQ	86.8	84.7	90.0	90.2	87.9	-1.40	7.5	2.7	88.3	-1.40	8.0	3.9	12	LA

Containerboard Interlaboratory Testing Program

Analysis 207

Bursting Strength (Mullen), 35 lb Linerboard - 35E1

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
NQZR4M	91.1	87.6	90.4	94.2	90.8	-0.46	8.6	2.7	91.7	-0.25	8.7	2.2	12	LJ
NUY3YM	93.0	96.4	95.6	93.2	94.6	0.75	8.3	1.7	93.6	0.39	8.3	1.7	12	AH
PUYF4U	99.3	97.2	94.7	99.6 *	97.7	1.77	7.3	2.3	97.7	1.78	9.4	3.7	11	LA
PZ6YK8	92.0	90.9	88.2	91.2	90.6	-0.55	7.2	1.6	90.3	-0.73	8.0	3.9	12	LC
Q2X87W	92.2	90.9	91.8	89.8	91.2	-0.34	5.3	1.1	89.8	-0.90	5.7	1.5	12	AH
QNDMTU	99.5	96.6	98.3	99.1 *	98.4	2.01 *	8.3	1.3	91.3	-0.37	6.1	5.4	12	LA
R2VWPJ	101.4 *	93.2	94.0	92.7	95.3	1.00	8.5	4.1	96.1	1.24	8.9	3.3	12	LC
R8VFN9	96.8	97.8	97.8	98.2	97.7	1.76	7.0	0.6	96.0	1.21	7.0	3.8	12	AH
TRKU4J	98.3	95.7	88.0	91.0	93.3	0.33	8.3	4.6	94.5	0.70	8.0	3.9	12	LC
TWV8LH	88.8	83.4 *	89.7	91.4	88.3	-1.27	5.3	3.5	89.9	-0.86	5.1	2.6	10	XX
VFWYKV	108.7 X	110.9 X	96.2	90.8	101.7	3.06 X	8.4	9.7 H	95.7	1.11	9.4	6.7	12	AA
VVR66C	92.2	91.5	90.7	96.0	92.6	0.12	7.3	2.3	91.2	-0.44	8.6	3.9	12	LC
WG9WQQ	92.2	91.1	85.5	90.2	89.7	-0.81	7.6	2.9	89.5	-1.00	7.2	3.2	12	LA
WZ4PBN	103.0 *	97.1	99.2	102.9 X	100.5	2.70 *	10.4	2.9	99.0	2.21	*10.2	3.1	12	LZ
WZJU6F	87.4	86.9	93.7	93.7	90.4	-0.59	6.8	3.8	88.9	-1.20	7.1	2.6	12	AH
YRHBLN	97.6	98.1	96.0	92.9	96.1	1.27	8.6	2.3	95.4	0.99	7.2	2.7	12	AX
ZJ4MMF	85.7	89.4	88.4	86.1	87.4	-1.57	8.3	1.8	88.2	-1.44	7.5	1.6	12	LB
ZQ4BV8	89.9	84.8	93.2	91.3	89.8	-0.80	10.0	3.6	95.7	1.09	9.4	5.9	12	XX
ZZQALC	88.9	96.6	93.3	94.6	93.3	0.36	6.6	3.3	89.8	-0.89	8.3	4.2	12	LA

Consensus (All Labs) Results

Wk Mean	92.59	91.89	92.54	91.88	Month Mean	92.24	Grand Mean	92.44
Avg SDr	8.11	7.62	7.90	7.66	Avg SD	7.85	Avg SD	7.98
SD btwn Labs	4.09	3.98	3.71	3.33	SD btwn Labs	3.08	SD btwn Labs	2.95
Labs Incld	52	52	52	52	SD btwn Wks	2.65	SD btwn Wks	3.49
Labs Excld	1	2	1	2	Labs Incld	52	Labs Incld	53
Labs not Rcvd	1	0	1	0				

Key to Instrument Codes Reported by Participants

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

	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
23BE3M	97.3	95.3	95.7	97.4	96.4	1.74	2.7	1.1	94.8	1.20	2.7	2.1	16	TU
34FMAK	96.4	95.4	94.1	96.0	95.5	1.50	3.1	1.0	94.7	1.18	3.2	1.6	16	TH
38NGKC	83.2	82.6	81.6	81.9	82.3	-1.84	1.9	0.7	83.3	-1.46	1.7	0.9	16	TU
3CYU3B	91.6	92.5 L	88.8	91.8	91.2	0.41	2.2	1.6	90.4	0.16	2.5	1.3	16	TH
3F94YL	91.0	93.6	88.7	87.2	90.1	0.14	3.0	2.8	90.1	0.11	3.0	2.8	4	LD
3T6XN3	85.4	88.3	91.0	88.6	88.3	-0.31	2.5	2.3	88.5	-0.26	2.6	1.6	16	LD
6RJ4ZW	88.8	88.3	89.3	87.9	88.5	-0.26	3.6	0.6	89.5	-0.04	3.2	1.2	16	LD
77XMEJ	95.5 H	95.0 H	96.0 H	97.4 H	96.0	1.62	8.4	1.0	99.4	2.25	*10.8	4.3	16	LC
7969KV	90.3	86.9	89.1	84.1	87.6	-0.50	2.4	2.7	88.3	-0.30	2.9	3.9	16	LZ
79PMDF	94.3	92.9	92.6	91.8	92.9	0.85	2.1	1.1	93.8	0.97	1.9	1.2	16	LD
7AYW27	101.6 *	101.2 *	101.5 *	101.4 *	101.4	3.00 X	3.0	0.2 L	100.8	2.57	*3.0	1.8	12	LD
7YT4HD	84.5 H	108.2 XH	81.8	No Data	91.5	0.50	7.4	14.5 H	93.8	0.95	4.4	6.7 H	14	MB
88LMNY	86.0 H	78.5 *H	79.9 *H	76.2 XH	80.2	-2.39 *	10.1	4.2	81.9	-1.79	8.5	4.9	16	LC
98JC8M	No Data	89.7	85.2	90.8	88.6	-0.25	2.8	3.0	94.4	1.10	3.5	5.8 H	14	LD
9ZJQH8	93.3	98.1	99.1 *	90.2	95.2	1.42	4.0	4.2	96.7	1.64	3.8	3.7	12	LZ
AHD426	85.4	84.5	85.2	85.4	85.1	-1.13	2.9	0.5 L	87.5	-0.50	3.0	2.3	16	LZ
AX9ALL	89.1	87.9	88.7	90.8 L	89.1	-0.11	2.7	1.2	88.4	-0.30	2.7	1.8	16	LD
AZ3VFC	89.9	91.5	89.5	90.4	90.3	0.19	2.5	0.9	89.7	0.01	4.6	2.4	16	TJ
C8AACY	95.1	92.6	No Data	93.2	93.6	1.03	3.0	1.3	93.1	0.80	3.0	1.3	15	LD
CF2RPL	88.4	88.0	86.9	87.9	87.8	-0.45	2.7	0.6	87.2	-0.56	2.9	1.5	16	LD
DDB6E6	93.1	93.5	90.6	93.9	92.8	0.81	2.1	1.5	91.6	0.45	2.7	2.0	16	LD
E7R322	86.4	87.4	87.4	88.2	87.3	-0.56	2.7	0.8	86.5	-0.73	2.5	0.9	16	LC
F8VJBG	91.6	90.5	89.8	90.8	90.6	0.27	3.7	0.7	89.8	0.04	6.1	2.1	16	LD
HAW4CL	89.9	92.0	90.3	90.7	90.7	0.29	2.4	0.9	90.9	0.29	3.0	1.0	12	LC
HQ37AU	89.7	89.4	89.3	90.0	89.6	0.01	2.3	0.3 L	89.9	0.06	2.1	0.3 L	16	LD
J2BKEZ	91.8	88.7	88.6	90.4	89.9	0.07	3.0	1.5	86.1	-0.83	3.3	2.6	16	EM
JDCW3E	84.0	83.8	83.3	85.0	84.0	-1.40	2.3	0.7	83.9	-1.33	2.6	1.4	16	EN
JJGVD6	87.1	87.0	93.6	85.5 L	88.3	-0.32	3.4	3.6	91.0	0.31	3.5	3.5	15	LD
JNQ6CZ	92.2	92.5	92.7	93.1	92.6	0.77	3.3	0.4 L	91.5	0.43	3.3	1.1	16	LD
JU27MW	89.4	89.1	90.0	91.2 L	89.9	0.09	2.2	0.9	88.8	-0.20	2.2	2.4	16	LZ
JVUVAX	87.1	86.7	90.6	90.3	88.7	-0.22	3.2	2.0	88.7	-0.22	3.2	2.0	4	LD
L9CHCV	91.7	90.8	89.1	89.4	90.3	0.17	2.6	1.2	88.4	-0.29	3.1	2.3	16	LG
MDLY6V	92.6	93.5	91.9	87.4 H	91.4	0.45	4.1	2.7	88.0	-0.38	4.2	4.2	12	TH
MPNPPB	79.6 *	79.8 *L	79.6 *L	80.8 *L	79.9	-2.44 *	1.4	0.6	79.0	-2.47	*2.1	3.2	16	RS
NJ23MH	87.5	90.5	85.5	86.7	87.6	-0.51	3.9	2.1	85.9	-0.86	3.4	2.3	8	EX

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42F1

TAPPI Official Test Method T822

WebCode	Weekly Means Week 1	Week 2	Week 3	Week 4	Monthly Results Mean	CPV	SD	SD Wks	Cumulative Results Mean	CPV	SD	SD Wks	Wks	Inst
NM7LTQ	86.0	86.1 L	85.4	83.4	85.2	-1.10	2.2	1.3	86.1	-0.82	2.5	3.2	16	LC
NQZR4M	91.9	94.2	93.0	90.3	92.4	0.71	2.7	1.6	92.0	0.55	2.9	2.4	16	LD
PUYF4U	93.9	95.6	96.0	98.1	95.9	1.61	2.9	1.7	96.9	1.68	2.7	1.6	15	LZ
PZ6YK8	89.1	89.3	92.1	92.8	90.9	0.33	3.1	1.9	90.6	0.23	3.3	2.2	16	LD
QNDMTU	92.1	91.7	92.5	92.9	92.3	0.69	3.3	0.5	90.2	0.14	2.8	1.8	16	LD
R8VFN9	94.3	95.5	96.0	95.4	95.3	1.45	3.8	0.7	94.6	1.15	3.7	2.1	16	LC
R9P2JK	97.9	93.3	91.3 L	92.2	93.7	1.04	1.6	3.0	93.6	0.91	1.2	2.0	16	TD
TRKU4J	88.2	88.0	89.6	89.5	88.9	-0.18	2.6	0.8	88.5	-0.27	2.2	1.0	15	LD
TWV8LH	84.2 L	77.4 *	86.3	85.0	83.2	-1.61	2.6	4.0	82.5	-1.66	3.4	3.3	16	LD
VAEC8J	88.2	92.3	90.2	89.5	90.0	0.12	3.1	1.7	88.4	-0.29	3.1	2.1	16	MB
VEQK8N	80.9 *	80.1 *	80.3	79.6 *	80.2	-2.37 *	3.3	0.5	83.2	-1.49	3.5	2.4	12	LC
WG9WQQ	89.1	87.1	90.4	87.7	88.6	-0.25	2.4	1.5	85.3	-1.01	2.6	3.0	16	LD
WZ4PBN	90.6	90.9	90.7	90.1	90.6	0.25	2.7	0.3 L	89.4	-0.05	3.1	1.4	16	LC
WZJU6F	91.4	91.3	91.6	92.4 L	91.7	0.53	2.5	0.5	90.6	0.21	2.9	1.5	16	LC
X9LMHF	87.7	84.7	86.2	86.2 H	86.2	-0.85	3.7	1.2	84.2	-1.27	2.8	3.6	16	LD
YRHBLN	76.1 X	75.3 X	76.6 *	69.8 X	74.5	-3.83 X	4.3	3.2	76.4	-3.07 X	4.1	2.4	16	LC
ZDDGMK	96.4	89.1 H	87.5	83.3	89.1	-0.13	4.5	5.5	88.3	-0.32	4.8	5.2	16	MB
ZJ4MMF	92.5	90.2	89.3 L	88.3	90.1	0.13	2.5	1.8	91.5	0.43	3.0	2.8	16	LC
ZZQALC	91.1	88.9	89.5	88.0	89.4	-0.04	3.2	1.3	89.1	-0.13	2.9	1.6	16	LD

Consensus (All Labs) Results

Wk Mean	90.12	89.69	89.27	89.65	Month Mean	89.57	Grand Mean	89.64
Avg SDr	3.23	3.45	3.42	3.28	Avg SD	3.52	Avg SD	3.61
SD btwn Labs	4.36	4.79	4.84	4.42	SD btwn Labs	3.95	SD btwn Labs	4.32
Labs Incld	52	52	53	51	SD btwn Wks	2.79	SD btwn Wks	2.74
Labs Excld	1	2	0	2	Labs Incld	52	Labs Incld	53
Labs not Rcvd	1	0	1	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
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
RS	Regmed Digital Crush Tester CT-2000	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)		

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 35 lb Linerboard - 35E1

TAPPI Official Test Method T822

Report #595 (D)
April 2019

	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
23BE3M	82.4	75.9 H	87.3	83.0	82.2	0.92	13.2	4.7	80.4	0.60	8.5	5.5	12	TU
34FMAK	76.1	77.2	76.6	77.4	76.8	-0.23	3.7	0.6	79.1	0.24	3.4	4.0	12	TH
38NGKC	71.3	71.3 L	72.3 L	72.5	71.8	-1.30	1.9	0.6	73.4	-1.43	1.7	1.3	12	TU
3CYU3B	81.3	81.6	81.2	79.1	80.8	0.63	2.5	1.1	79.4	0.31	2.9	1.6	12	TH
3F94YL	80.9	81.6	79.9	79.3	80.4	0.55	3.4	1.0	80.9	0.77	3.9	0.9	8	LD
3T6XN3	79.0	79.1	79.6	79.0	79.2	0.28	2.9	0.3 L	79.1	0.22	2.9	0.6 L	12	LD
6RJ4ZW	78.9	80.1	80.6	81.0	80.2	0.49	3.9	0.9	80.2	0.55	3.6	1.1	8	LD
77XMEJ	80.2 H	79.2	76.6 H	76.6 H	78.2	0.06	6.3	1.8	80.9	0.77	6.2	3.7	8	LC
7969KV	84.0	75.5	82.0	77.1	79.7	0.38	3.5	4.0	78.6	0.09	4.0	3.0	12	LZ
79PMDF	81.1	80.9	80.7	79.9	80.6	0.59	2.6	0.5	82.1	1.09	2.4	1.2	12	LD
7AYW27	90.0 *	89.6 *	90.7 *	91.2 X	90.3	2.68 *	3.0	0.7	90.3	3.51 X	3.0	0.7 L	4	LD
7YT4HD	82.7	93.8 X	70.7 H	No Data	82.4	0.98	5.5	11.6 H	84.3	1.76	4.2	6.6 H	8	MB
88LMNY	66.8 *H	65.2 *H	63.2 XH	66.6 XH	65.5	-2.68 *	8.0	1.7	69.9	-2.45 *	8.0	6.1 H	12	LC
98JC8M	No Data	76.8	74.0	77.8	76.2	-0.36	4.7	2.0	81.4	0.89	5.7	5.8	10	LC
9ZJQH8	77.0	83.6	82.8	76.2	79.9	0.44	5.1	3.9	81.4	0.92	5.3	3.7	12	LZ
AHD426	72.4	72.6	74.0 L	73.3	73.1	-1.04	2.7	0.8	79.6	0.39	2.9	5.4	12	LZ
AX9ALL	75.5	77.8	77.5	75.5	76.6	-0.28	3.8	1.2	76.7	-0.46	3.4	1.9	12	LD
AZ3VFC	76.6	76.1	78.5	79.2	77.6	-0.06	3.0	1.5	76.4	-0.56	5.9	2.1	12	TJ
C8AACY	84.6	82.6	No Data	83.6	83.6	1.22	3.2	1.0	83.9	1.64	2.9	1.6	11	LD
CF2RPL	76.6	74.3 L	74.9	74.0	75.0	-0.63	2.8	1.2	75.7	-0.74	3.3	1.5	12	LD
DDB6E6	79.7	78.8 L	81.5	78.8	79.7	0.39	2.6	1.3	79.7	0.41	3.1	1.4	12	LD
E7R322	79.1	78.9	79.2	77.8	78.7	0.18	3.1	0.7	77.9	-0.12	3.0	0.9	12	LC
F8VJBG	85.4	81.6	80.9	80.1	82.0	0.88	3.2	2.3	80.8	0.72	3.1	2.0	12	LD
HAW4CL	79.2	84.5 L	80.7	81.5	81.5	0.77	2.0	2.2	79.0	0.22	2.5	3.0	8	LC
HQ37AU	80.4	80.3	80.3	80.2	80.3	0.52	2.5	0.1 L	80.3	0.60	2.2	0.1 L	12	LD
J2BKEZ	79.9	78.6	79.5	78.1	79.0	0.24	2.6	0.8	74.3	-1.18	3.2	4.0	12	EM
JDCW3E	77.2	74.1	76.4	75.3	75.8	-0.46	3.0	1.3	76.2	-0.61	3.2	1.6	12	EN
JJGVD6	75.2	76.7	75.0	77.0	76.0	-0.41	3.4	1.1	77.6	-0.20	3.7	2.4	12	LD
JNQ6CZ	80.3	80.8 L	81.0	80.4	80.6	0.59	2.8	0.3 L	80.6	0.67	3.5	0.4 L	12	LD
JU27MW	78.2	79.4 L	78.5	81.9 L	79.5	0.34	2.3	1.7	79.3	0.29	2.5	1.4	8	LZ
JVUVAX	81.0	76.8	76.8	76.9	77.9	0.00	3.0	2.1	77.9	-0.12	3.0	2.1	4	LD
L9CHCV	79.9	80.6	77.1	82.7	80.1	0.47	2.9	2.3	78.6	0.08	3.2	2.8	12	LG
MDLY6V	79.9	76.9	81.9	81.7	80.1	0.48	3.8	2.3	76.1	-0.65	4.2	4.8	8	TH
MPNPPB	67.2 *L	68.3 *L	67.2 *	68.3 *	67.8	-2.18 *	2.0	0.6	66.7	-3.38 X	2.3	2.1	12	RS
NJ23MH	75.3	75.9	75.3	75.0	75.4	-0.54	3.5	0.4 L	76.7	-0.47	3.4	1.7	9	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
NM7LTQ	75.1 L	73.0	74.6 L	70.5 *	73.3	-0.99	2.2	2.1	74.7	-1.06	2.8	3.1	12	LC
NQZR4M	81.1	80.1	80.3	80.9 L	80.6	0.58	2.3	0.5	80.4	0.62	2.8	1.1	12	LD
PUYF4U	85.0	84.0	85.8	87.0 *	85.4	1.63	4.0	1.2	85.8	2.19 *	3.6	1.5	11	LZ
PZ6YK8	80.7	83.9	82.0	82.2	82.2	0.93	4.3	1.3	81.0	0.79	4.7	1.4	12	LD
QNDMTU	80.1	81.8	78.0	81.7	80.4	0.54	3.9	1.8	79.1	0.25	3.3	1.5	12	LD
R8VFN9	76.7 H	84.4 L	86.3	80.9	82.1	0.90	4.5	4.2	81.7	0.99	5.3	4.3	12	LC
R9P2JK	72.4 L	70.0 L	70.8 L	70.9 L	71.0	-1.49	1.0	1.0	73.2	-1.49	2.1	2.4	12	TD
TRKU4J	78.9	79.2	78.4	77.4	78.5	0.13	2.7	0.8	77.3	-0.29	2.9	1.2	12	LD
TWV8LH	72.2	66.3 *	73.7	75.3	71.9	-1.30	3.0	3.9	70.2	-2.36 *	3.1	3.3	11	LD
VAEC8J	74.3	74.3	73.1	73.9	73.9	-0.86	3.1	0.6	73.4	-1.42	3.0	1.9	8	MB
VEQK8N	68.5 *	70.2	69.9	71.7	70.1	-1.68	3.8	1.3	71.2	-2.07 *	3.4	1.7	8	LC
WG9WQQ	79.1	76.8	79.9	79.3	78.8	0.19	2.7	1.4	76.5	-0.51	2.8	1.9	12	LD
WZ4PBN	79.6	77.0	76.3	79.6	78.1	0.05	3.2	1.7	77.5	-0.23	3.3	1.5	12	LC
WZJU6F	80.7	80.2	81.0	81.3	80.8	0.63	4.2	0.5	80.8	0.74	3.8	1.1	12	LC
X9LMHF	78.9	77.1	77.1	78.6	77.9	0.00	3.5	1.0	75.8	-0.73	3.8	2.6	12	LD
YRHBLN	65.7 *	70.1	65.0 *H	62.3 XH	65.8	-2.61 *	4.7	3.2	66.7	-3.37 X	4.1	3.3	12	LC
ZDDGMK	62.1 X	80.3	75.8	74.1 H	73.1	-1.04	4.7	7.7 H	75.0	-0.97	5.2	5.8	12	MB
ZJ4MMF	80.9	79.7	75.8	75.5	78.0	0.02	3.3	2.7	82.4	1.20	3.8	3.7	12	LC
ZZQALC	80.2	80.4 L	82.3	77.4	80.1	0.47	3.3	2.0	78.7	0.11	3.4	2.1	12	LD

Consensus (All Labs) Results

Wk Mean	78.18	77.77	78.03	77.97	Month Mean	77.89	Grand Mean	78.30
Avg SDr	3.54	4.93	3.60	3.36	Avg SD	3.97	Avg SD	3.92
SD btwn Labs	4.77	4.82	4.82	3.73	SD btwn Labs	4.64	SD btwn Labs	3.43
Labs Incld	52	53	52	50	SD btwn Wks	2.65	SD btwn Wks	2.98
Labs Excld	1	1	1	3	Labs Incld	54	Labs Incld	51
Labs not Rcvd	1	0	1	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
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
RS	Regmed Digital Crush Tester CT-2000	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)		

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F1

TAPPI Official Test Method T826

Report #595 (D)
April 2019

	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
23BE3M	23.4 L	24.5 L	24.7 L	25.4 L	24.5	0.79	0.0	0.8	24.2	0.82	0.0	1.3	16	LA
292NCK	22.6	22.2	22.3	22.2	22.3	-1.02	1.7	0.2	22.3	-1.19	1.7	0.4	16	LZ
34FMAK	22.3	21.9 L	20.9 *	21.4 L	21.6	-1.59	1.5	0.6	22.3	-1.18	1.6	0.8	16	LH
3LJ6C3	23.2	21.9	21.8	21.9 L	22.2	-1.12	1.5	0.7	22.7	-0.73	1.4	0.6	12	LW
3T6XN3	23.1	23.8	23.6 H	23.3	23.5	-0.06	1.9	0.3	23.5	0.03	1.8	0.9	16	LA
6RJ4ZW	24.0	23.2	23.8 L	24.7	23.9	0.31	1.6	0.6	23.6	0.14	1.6	0.5	16	LA
77XMEJ	25.4	25.2	25.6	26.1 *	25.6	1.68	1.8	0.4	25.3	1.89	1.8	0.8	16	LA
7969KV	22.0 L	21.1	20.9 *	22.8	21.7	-1.51	1.7	0.9	21.9	-1.57	1.7	0.6	16	LA
79PMDF	23.9	23.6	23.1	23.6	23.6	0.01	2.0	0.3	23.4	-0.01	1.8	0.3 L	16	LY
7YT4HD	23.7	42.3 XH	25.2	No Data	30.4	5.67 X	2.2	10.4 H	26.7	3.34 X	1.7	7.4 H	14	LA
88LMNY	26.1 *	25.1	26.1	25.7	25.7	1.81	2.0	0.5	24.9	1.50	2.0	0.7	16	LU
98JC8M	No Data	24.0	24.5	23.7	24.1	0.45	1.7	0.4	24.3	0.84	2.0	0.6	14	LW
APW87M	25.3 H	25.4	26.7 *	24.6	25.5	1.63	1.9	0.9	25.4	1.95 *	1.8	0.9	12	LA
AX9ALL	23.8	23.5	23.3	23.0	23.4	-0.14	1.7	0.3	23.4	-0.07	1.7	0.5	16	LA
AZ3VFC	23.4	23.5	23.5	23.8	23.6	0.01	1.3	0.2	22.9	-0.54	1.1	0.4	16	TT
C8AACY	23.2	23.0	No Data	22.6	23.0	-0.49	2.2	0.3	22.6	-0.85	1.7	0.7	15	LY
CF2RPL	24.3	24.3	24.7 H	23.8	24.3	0.58	2.1	0.4	23.6	0.15	1.9	1.2	16	LU
DDB6E6	25.5	25.1	25.5	25.3 L	25.4	1.49	1.3	0.2	24.6	1.19	1.7	0.8	16	LZ
ENA4UH	23.9	24.1	23.9	25.1	24.3	0.60	1.7	0.6	24.8	1.40	1.7	1.0	16	LU
F8VJBG	23.3	23.0	22.8	23.0	23.0	-0.43	1.5	0.2	22.8	-0.61	1.6	0.5	16	LY
FN3JHY	26.3 *	23.9	25.4	25.8	25.3	1.49	1.9	1.1	25.1	1.70	1.9	2.6	16	LU
FZYPBX	36.0 X	35.7 XH	26.3 H	25.3	30.8	6.01 X	2.4	5.8 H	27.7	4.36 X	2.0	6.5 H	16	LZ
HAW4CL	22.7 L	22.6	23.6	21.4 H	22.5	-0.83	1.9	0.9	22.3	-1.13	3.4	1.2	12	LA
JCV3ZJ	24.1	22.8	24.6	23.5	23.8	0.17	1.7	0.8	23.7	0.25	1.6	0.7	16	LY
JDCW3E	21.9	20.8 *	21.6	21.8	21.5	-1.67	1.5	0.5	21.6	-1.82	1.6	0.4	16	LY
JJGVD6	22.7	22.7	22.3	23.2	22.7	-0.67	1.7	0.4	23.0	-0.46	1.8	1.1	15	LZ
JNQ6CZ	23.2	23.2	23.4	23.4	23.3	-0.19	1.5	0.1	23.2	-0.20	1.4	0.1 L	16	LA
JVUVAX	23.3	22.8	22.3	23.0	22.8	-0.59	1.6	0.4	23.0	-0.48	1.6	0.4	12	LU
L9CHCV	23.1	23.2	23.5	22.4	23.0	-0.42	1.5	0.4	22.8	-0.59	1.5	0.5	16	LU
LA6FK2	20.8 *	20.8 *	21.1	19.1 X	20.4	-2.57 *	1.5	0.9	20.0	-3.51 X	2.0	1.4	16	LZ
LJ7YQA	24.7	25.1	25.2	24.5	24.9	1.09	1.6	0.3	24.9	1.46	1.6	0.3 L	4	LH
LYHBH4	23.6	22.3	24.1	23.2	23.3	-0.22	1.6	0.8	23.0	-0.43	1.6	0.6	16	LA
MEDZ4R	26.1 *	25.1	26.1	25.7	25.7	1.81	2.0	0.5	24.9	1.50	2.0	0.7	16	XX
NJ23MH	24.7 L	25.1 L	25.0 L	25.2 L	25.0	1.19	0.0	0.2	24.1	0.67	0.0	1.0	8	TT
NM7LTQ	22.2 L	22.0	22.4	21.9	22.1	-1.17	1.2	0.2	22.0	-1.45	1.2	0.7	16	LA

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F1

TAPPI Official Test Method T826

Report #595 (D)
April 2019

	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
NQZR4M	22.9	22.9	23.2	22.6	22.9	-0.52	1.6	0.2	23.2	-0.27	1.7	0.6	16	LA
PUYF4U	22.7	23.7	23.3	22.7	23.1	-0.37	1.8	0.5	23.2	-0.23	1.8	0.5	15	LW
PZ6YK8	24.6	24.3	23.7	24.0	24.1	0.49	1.9	0.4	24.0	0.56	1.8	0.9	16	LA
Q2X87W	23.8	23.9	24.2 L	23.9 L	24.0	0.34	1.1	0.2	23.1	-0.37	1.0	0.6	16	TT
QNDMTU	24.8	23.7	23.7 L	23.8	24.0	0.38	1.3	0.5	23.6	0.17	1.6	0.7	16	LA
R8VFN9	21.9	22.7	23.6	22.7	22.7	-0.68	2.0	0.7	22.9	-0.53	3.0	0.9	15	LH
R9P2JK	30.9 XH	30.1 X	29.8 XH	28.9 XH	29.9	5.30 X	3.4	0.9	31.7	8.34 X	2.8	2.0	8	XX
TRKU4J	24.2	23.5	23.6	23.8	23.8	0.19	1.7	0.3	23.5	0.11	1.7	0.4	16	LA
TVW294	22.8 H	22.5	22.1	23.1	22.6	-0.77	2.2	0.4	22.9	-0.50	1.8	0.5	16	LA
VFWYKV	23.8	25.7	26.8 *	26.2 *	25.6	1.72	2.0	1.3 H	24.2	0.78	1.9	1.5	16	LH
VVR66C	26.0	25.9 *	25.3	24.7	25.5	1.60	1.7	0.6	24.1	0.63	1.8	1.3	16	LA
WG9WQQ	22.7	21.8	22.8	22.2 L	22.4	-0.96	1.2	0.5	22.3	-1.10	1.2	0.3 L	16	BK
WZ4PBN	22.6	23.2	22.4	23.3	22.8	-0.58	1.6	0.4	22.7	-0.75	1.7	0.7	16	LW
WZJU6F	23.4	23.7	23.1	23.6	23.4	-0.09	1.8	0.2	23.1	-0.36	1.7	0.4	16	LU
X9LMHF	22.3	22.4	21.3	22.4	22.1	-1.22	1.4	0.5	22.5	-0.94	1.5	0.8	16	LH
XCLXEE	23.9	25.8	24.6	23.9	24.6	0.84	1.7	0.9	22.2	-1.21	1.6	2.5	15	LY
XKNTME	24.9	24.0	23.9 L	23.5 H	24.1	0.43	1.9	0.6	23.3	-0.15	1.8	1.3	16	LA
YJ3Q4J	23.0	23.4	23.8	23.1	23.3	-0.18	1.5	0.3	23.9	0.47	1.5	0.6	16	LH
YRHBLN	24.7 H	22.6 H	23.0 H	24.0 H	23.6	0.02	2.8	0.9	23.0	-0.47	2.0	0.8	16	LZ
ZDDGMK	23.8	24.0	23.7	23.5	23.8	0.17	1.5	0.2	26.0	2.65 *	1.8	8.2 H	16	LA
ZJ4MMF	23.6	24.7	23.8	24.7	24.2	0.55	1.8	0.6	24.2	0.73	1.7	0.4	16	LW
ZY8GHU	21.4 L	21.8	22.8	23.0	22.2	-1.08	1.9	0.8	22.2	-1.20	1.9	0.8	4	LU
ZZQALC	21.3	23.1	22.8	23.5	22.7	-0.73	1.9	1.0	23.2	-0.20	1.7	0.7	16	LY

Consensus (All Labs) Results

Wk Mean	23.57	23.45	23.70	23.64	Month Mean	23.54	Grand Mean	23.43
Avg SDr	1.75	1.68	1.72	1.83	Avg SD	1.74	Avg SD	1.78
SD btwn Labs	1.25	1.25	1.43	1.21	SD btwn Labs	1.21	SD btwn Labs	0.99
Labs Incld	55	55	56	55	SD btwn Wks	0.58	SD btwn Wks	1.43
Labs Excld	2	3	1	2	Labs Incld	55	Labs Incld	54
Labs not Rcvd	1	0	1	1				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	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		

	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
23BE3M	22.2 L	24.1 L	24.2 L	22.9 L	23.3	0.91	0.0	1.0	22.8	0.35	2.0	1.6	12	LA
292NCK	22.0	20.6	20.7	20.8	21.0	-1.46	1.4	0.6	21.4	-0.99	1.5	0.5	12	LZ
34FMAK	20.8	21.6	22.0	21.2	21.4	-1.07	2.0	0.5	21.3	-1.13	1.7	1.9	12	LH
3LJ6C3	22.4	22.5	22.0	22.5	22.4	-0.10	1.7	0.3	22.1	-0.31	1.6	0.4	12	LW
3T6XN3	22.1	21.8	22.7	22.2	22.2	-0.27	1.6	0.4	22.5	0.03	1.7	0.6	12	LW
6RJ4ZW	21.9	22.5	22.5 L	23.6	22.6	0.14	1.5	0.7	22.7	0.27	1.5	0.6	8	LA
77XMEJ	23.1	24.2	23.7	23.5	23.6	1.19	2.1	0.5	23.8	1.28	1.9	0.6	8	LA
7969KV	22.3	19.9 *	21.2	22.8 L	21.6	-0.92	1.2	1.3 H	21.1	-1.31	1.3	1.0	12	LA
79PMDF	23.4	23.3	23.3	22.3	23.1	0.65	1.7	0.5	22.7	0.20	1.7	0.4	12	LY
7YT4HD	22.5	31.8 X	23.8	No Data	26.0	3.63 X	1.8	5.1 H	24.2	1.70	1.9	3.4 H	7	LA
88LMNY	24.4	22.8	23.4	23.4	23.5	1.03	1.6	0.7	24.2	1.64	1.8	1.2	12	LU
98JC8M	No Data	22.2	24.3	23.6	23.4	0.91	1.9	1.1	23.4	0.89	1.9	0.8	10	LW
APW87M	24.2	23.6 L	23.4	23.4	23.7	1.23	1.6	0.4	23.5	1.00	1.7	0.3	8	LA
AX9ALL	22.5	21.5	22.4	22.5	22.2	-0.25	1.7	0.5	22.3	-0.14	1.6	0.5	12	LA
AZ3VFC	22.3 L	21.7 L	21.7	22.7	22.1	-0.37	1.1	0.5	21.8	-0.61	1.1	0.4	12	TT
C8AACY	22.7	21.3	No Data	22.8	22.3	-0.20	1.5	0.9	21.8	-0.65	1.7	0.7	11	LY
CF2RPL	23.4	23.4	23.6	23.4	23.4	1.01	1.7	0.1	22.5	0.01	1.5	1.0	12	LU
DDB6E6	23.5	22.8	24.1	24.4	23.7	1.27	1.5	0.7	23.0	0.52	1.6	1.4	12	LZ
ENA4UH	23.3	24.9 *	25.0 *	23.7	24.2	1.79	1.8	0.8	24.6	2.04 *	2.0	1.2	12	LU
F8VJBG	24.0	21.6	21.3	21.8	22.2	-0.27	1.6	1.2 H	22.0	-0.46	1.6	0.9	12	LY
FN3JHY	23.9	22.9	23.0	23.3	23.3	0.82	1.9	0.5	23.7	1.18	1.9	0.6	12	LU
FZYPBX	28.9 X	30.2 X	24.3	24.5	27.0	4.58 X	1.8	3.0 H	24.7	2.12 *	1.7	2.4 H	12	LZ
HAW4CL	21.2 L	20.9 H	21.2	20.5	21.0	-1.53	1.9	0.3	21.0	-1.36	1.7	0.6	8	LA
JCV3ZJ	23.3	24.4	22.2	22.8	23.2	0.74	1.8	0.9	22.9	0.41	1.7	0.6	12	LU
JDCW3E	20.9	20.3	21.0	20.9	20.8	-1.73	1.4	0.3	20.9	-1.42	1.3	0.5	12	LY
JJGVD6	22.2	20.9	22.3	21.8	21.8	-0.67	1.9	0.6	21.7	-0.74	1.8	0.7	12	LZ
JNQ6CZ	22.5	22.2	22.3	22.4	22.3	-0.11	1.5	0.1	22.3	-0.10	1.4	0.2 L	12	LA
JVUVAX	22.1	21.4	21.3	21.1	21.5	-1.00	1.6	0.4	21.9	-0.55	1.6	0.6	12	LA
L9CHCV	22.6	21.9	21.1	22.4	22.0	-0.47	1.4	0.6	21.9	-0.50	1.6	0.5	12	LW
LA6FK2	20.8	22.0	20.4	20.0 *	20.8	-1.68	1.7	0.8	20.1	-2.20 *	1.8	1.0	8	LZ
LJ7YQA	24.0	23.9	23.6	23.9 H	23.9	1.42	1.8	0.2	23.9	1.33	1.8	0.2 L	4	LH
LYHBH4	22.0	22.4	22.1	22.1	22.1	-0.32	1.4	0.2	22.2	-0.21	1.5	0.2 L	12	LA
MEDZ4R	24.4	22.8	23.4	23.4	23.5	1.03	1.6	0.7	24.2	1.64	1.8	1.2	12	XX
NJ23MH	23.1 L	23.3 L	23.6 L	23.6 L	23.4	0.96	0.0	0.2	23.5	1.03	0.0	0.5	9	LZ
NM7LTQ	20.2 *L	19.8 *L	20.2 *	20.1 *L	20.1	-2.42 *	1.0	0.2	20.5	-1.84	1.1	0.8	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
NQZR4M	23.2	22.5	23.5	22.7	23.0	0.54	1.6	0.4	22.8	0.34	1.7	0.3	12	LU
PUYF4U	21.5	22.4	21.9	22.1	21.9	-0.52	1.6	0.4	22.0	-0.44	1.7	0.6	11	LW
PZ6YK8	22.4	23.6	23.5	23.8	23.3	0.87	1.6	0.6	23.2	0.68	1.7	0.6	12	LA
Q2X87W	22.4 L	22.4	22.8	22.4	22.5	0.03	1.1	0.2	22.0	-0.42	1.0	0.4	12	TT
QNDMTU	21.9	22.3	22.6	22.5	22.3	-0.13	1.5	0.3	22.6	0.10	1.5	0.5	12	LA
R8VFN9	22.5	23.3	23.1	23.1	23.0	0.57	1.9	0.3	22.9	0.43	3.0	1.1	12	LH
R9P2JK	29.6 X	28.0 X	28.3 XH	27.6 XH	28.4	6.03 X	3.1	0.9	28.4	5.61 X	3.1	0.9	4	XX
TRKU4J	22.1	23.3	22.6	22.3	22.6	0.12	1.5	0.5	22.4	-0.08	1.6	0.5	12	LA
TVW294	22.5	22.4 H	21.7	22.5 L	22.3	-0.20	1.8	0.4	22.0	-0.44	1.9	0.9	12	LA
VFWYKV	22.9	22.9	23.3	22.7	22.9	0.49	1.9	0.2	22.6	0.11	2.0	0.8	12	LH
VVR66C	24.3	22.7	23.1	24.3	23.6	1.17	2.0	0.9	23.4	0.91	1.8	0.9	12	LA
WG9WQQ	21.0	20.6 L	20.4	21.1	20.8	-1.72	1.2	0.3	21.0	-1.41	1.1	0.5	12	BK
WZ4PBN	21.6	22.6	22.3	22.0	22.1	-0.37	1.5	0.4	21.8	-0.64	1.7	0.5	12	LW
WZJU6F	22.0	22.4 L	22.3	22.4	22.2	-0.21	1.3	0.2	22.2	-0.23	1.6	0.3	12	LU
X9LMHF	21.5	21.0	20.8	21.4	21.2	-1.30	1.3	0.3	21.5	-0.91	1.5	0.5	12	LH
XCLXEE	22.0	22.8	22.7	22.2	22.4	-0.05	1.6	0.4	21.5	-0.89	1.6	2.0	12	LY
XKNTME	23.2	23.7	22.4 L	23.9	23.3	0.84	1.3	0.6	21.5	-0.85	1.3	1.6	12	LA
YJ3Q4J	23.7	23.8	24.0	24.6	24.0	1.58	1.6	0.4	23.9	1.38	1.6	0.3	12	LH
YRHBLN	22.7 H	22.0 H	21.9 H	22.5 H	22.3	-0.18	2.8	0.3	22.4	-0.09	2.1	0.9	12	XX
ZDDGMK	21.5	21.0	22.2	21.6	21.6	-0.88	1.9	0.5	22.6	0.11	2.0	1.5	12	LA
ZJ4MMF	23.1	24.3	23.4	23.8	23.6	1.21	1.8	0.5	23.6	1.08	1.8	0.5	12	LW
ZY8GHU	20.4 *L	21.5	21.6 L	20.0 *L	20.9	-1.60	1.1	0.8	20.9	-1.48	1.1	0.8	4	LU
ZZQALC	21.7	21.7	22.0	22.4	21.9	-0.52	1.7	0.3	22.0	-0.40	1.6	0.3	12	LY

Consensus (All Labs) Results

Wk Mean	22.47	22.36	22.52	22.54	Month Mean	22.45	Grand Mean	22.45
Avg SDr	1.61	1.73	1.67	1.58	Avg SD	1.65	Avg SD	1.69
SD btwn Labs	1.03	1.17	1.12	1.13	SD btwn Labs	0.98	SD btwn Labs	1.06
Labs Incld	55	55	56	56	SD btwn Wks	0.58	SD btwn Wks	1.00
Labs Excld	2	3	1	1	Labs Incld	55	Labs Incld	57
Labs not Rcvd	1	0	1	1				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	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
23BE3M	221.4	2.38 *	23.08		212.9	2.14 *	32.87 H	4	LA
292NCK	163.1	-0.03	7.57 L		167.1	0.19	6.55	4	LA
3T6XN3	174.6	0.44	21.88		174.3	0.50	2.05	3	LA
77XMEJ	143.6	-0.84	25.17		140.7	-0.94	3.91	4	LA
7969KV	173.3	0.39	22.76		171.7	0.39	3.07	4	EV
7AYW27	135.8	-1.17	14.48		128.4	-1.46	6.68	3	EV
7GG7P3	174.1	0.42	20.05		170.5	0.33	2.80	4	LS
7YT4HD	193.7	1.23	41.18 H		193.7	1.32	0.00	1	LA
88LMNY	158.8	-0.21	23.43		148.5	-0.60	7.09	4	EV
CF2RPL	189.5	1.06	12.43		183.7	0.90	7.32	4	EV
FN3JHY	184.1	0.84	18.73		166.4	0.16	20.13	4	EV
FZYPBX	169.9	0.25	20.85		169.1	0.27	5.41	4	XX
H93FTQ	148.1	-0.66	14.11		146.7	-0.68	7.05	4	EV
HAW4CL	185.8	0.91	27.40		194.2	1.34	11.74	3	LA
JDCW3E	174.7	0.45	11.09		175.5	0.55	6.56	4	EV
JJGVD6	0.3	-6.79 X	0.02 L		0.3	-6.90 X	0.01	2	LA
JNQ6CZ	162.8	-0.05	19.20		162.3	-0.02	0.54 L	4	XX
JVUVAX	177.2	0.55	15.52		177.2	0.62	0.00	1	XX
LYHBH4	123.2	-1.69	3.17 L		123.2	-1.68	0.00	1	LA
PUYF4U	168.0	0.17	13.95		165.4	0.12	5.11	4	EV
PZ6YK8	158.1	-0.24	15.50		157.0	-0.24	3.68	4	LA
R2VWPJ	138.1	-1.07	19.47		158.0	-0.20	14.76	4	LA
R8VFN9	113.1	-2.11 *	13.28		109.2	-2.27 *	5.47	4	EV
VFWYKV	121.9	-1.75	8.73		121.9	-1.73	0.00	1	XX
VVR66C	158.7	-0.22	16.38		156.2	-0.28	4.11	4	LA
WZ4PBN	161.6	-0.10	10.84		163.7	0.04	4.53	4	XX
ZDDGMK	167.6	0.15	20.65		176.2	0.58	7.06	4	LA
ZZQALC	185.8	0.91	21.38		178.2	0.66	5.18	4	EV

Consensus (All Labs) Results

Month Mean	163.94	Grand Mean	162.66
Avg SD	19.29	Avg SD Months	10.16
SD btwn Labs	24.09	SD btwn Labs	23.51
Labs Incld	27	Labs Incld	27

Key to Instrument Codes Reported by Participants

EV	Emveco Microgage Model 210-R	LA	L&W Autoline
LS	L&W 263	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42D3

TAPPI Official Test Method T538

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
6RJ4ZW	357.4	0.26	10.13		376.6	1.86 *	17.35 H	4	LA
7GG7P3	354.1	-0.33	9.31		363.1	-0.23	6.94	4	XX
9ZJQH8	354.4	-0.28	7.00		359.4	-0.80	4.38	3	XX
AX9ALL	345.8	-1.81	7.51		356.5	-1.25	7.59	4	LA
C8AACY	367.5	2.06 *	7.29		366.0	0.21	4.55	4	PP
D87AMH	348.6	-1.31	4.95		355.4	-1.41	4.56	4	LA
DDB6E6	357.5	0.26	13.20	H	370.4	0.90	8.86	4	XX
LYHBH4	350.9	-0.91	5.32		355.7	-1.37	6.79	2	LA
MDLY6V	266.2	-16.05 X	7.84		280.3	-13.03 X	20.22 H	3	SH
QNDMTU	360.7	0.85	8.03		366.0	0.22	3.65	4	LA
TRKU4J	361.1	0.92	3.28	L	368.7	0.63	5.59	4	XX
VFWYKV	355.9	-0.01	7.25		364.2	-0.06	11.73	2	XX
WZJU6F	356.8	0.15	7.63		371.1	1.01	11.10	4	XX
XKNTME	356.9	0.17	6.10		366.5	0.29	6.39	4	XX

Consensus (All Labs) Results

Month Mean	355.97	Grand Mean	364.58
Avg SD	7.84	Avg SD Months	8.50
SD btwn Labs	5.59	SD btwn Labs	6.47
Labs Incld	13	Labs Incld	13

Key to Instrument Codes Reported by Participants

LA	L & W Roughness Sheffield - Autoline	PP	Technidyne Profile/Plus
SH	Sheffield (Bendix Precisionaire)	XX	Instrument make/model not specified by lab

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
3T6XN3	125.6	1.30	10.16		127.7	1.19	1.85 L	3	HY
6RJ4ZW	48.5	-3.43 X	0.65 L		45.6	-3.45 X	2.58	3	LZ
77XMEJ	127.0	1.38	11.51		129.3	1.28	6.81	3	SC
7969KV	105.8	0.08	5.26		110.9	0.24	4.92	3	TM
7AYW27	125.4	1.28	8.26		123.3	0.94	2.97	2	HY
7GG7P3	111.8	0.45	10.13		109.8	0.17	4.54	3	XX
88LMNY	98.2	-0.38	11.32		96.6	-0.57	2.43	3	TM
C8AACY	114.4	0.61	8.56		116.2	0.54	2.55	2	HY
CF2RPL	95.6	-0.54	10.26		91.1	-0.88	4.08	3	TM
FN3JHY	65.6	-2.38 *	7.02		62.7	-2.49 *	2.61	3	TM
FZYPBX	106.0	0.10	12.94		110.7	0.22	12.28	3	TM
HAW4CL	128.6	1.48	8.65		146.6	2.25 *	25.46	2	SC
HAYRTZ	72.9	-1.94 *	5.70		113.4	0.37	43.17 H	3	TM
JVUVAX	104.4	0.00	7.67		103.3	-0.19	2.20 L	3	TM
NM7LTQ	99.0	-0.33	3.87		97.5	-0.52	1.40 L	3	TM
NQZR4M	108.4	0.24	4.22		105.9	-0.04	2.14 L	3	HZ
QNDMTU	96.4	-0.49	3.12		96.7	-0.57	4.47	3	SC
TRKU4J	97.8	-0.41	4.02		98.0	-0.49	1.91 L	3	TM
TZEXCL	105.7	0.07	9.62		101.4	-0.30	4.18	3	SC
WZJU6F	116.3	0.73	8.07		114.2	0.42	3.78	3	HY
XKNTME	102.0	-0.15	2.48		115.5	0.50	22.61	3	SC
YRHBLN	81.9	-1.38	5.10		78.4	-1.60	25.73	3	SC
ZZQALC	109.0	0.28	9.78		98.5	-0.46	9.06	3	XX

Consensus (All Labs) Results

Month Mean	104.45	Grand Mean	106.72
Avg SD	8.17	Avg SD Months	13.69
SD btwn Labs	16.31	SD btwn Labs	17.71
Labs Incld	22	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	102.51	16.89	1.94	18
Modified Scott Bond Mechanics	120.94	6.59	16.49	2

Analysis Notes

6RJ4ZW - 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
292NCK	25.4	-0.34	0.89		24.1	-1.21	1.08		4
3F94YL	28.6	0.88	4.22		28.6	0.75	0.00		1
3T6XN3	24.0	-0.87	4.18		24.1	-1.21	0.50		4
6RJ4ZW	30.4	1.56	4.04		30.6	1.60	2.29		4
77XMEJ	22.2	-1.55	0.84		21.3	-2.40 *	1.44		4
7969KV	27.2	0.35	1.79		29.5	1.14	1.82		4
88LMNY	28.3	0.76	4.15		25.9	-0.43	2.14		4
98JC8M	25.4	-0.34	0.55	L	25.1	-0.76	1.59		4
C8AACY	25.7	-0.22	2.05		25.3	-0.69	1.31		3
CF2RPL	21.8	-1.70	3.35		28.1	0.55	4.54	H	4
DDB6E6	27.6	0.50	0.82		28.9	0.87	1.91		4
FN3JHY	26.6	0.12	2.19		27.5	0.28	1.75		4
FZYPBX	23.2	-1.17	3.48		24.4	-1.06	1.41		4
HAW4CL	22.5	-1.44	0.52	L	27.4	0.23	4.26	H	3
JDCW3E	28.8	0.95	1.76		28.4	0.66	0.68		4
JNQ6CZ	26.2	-0.03	0.84		26.5	-0.15	0.48		4
JVUVAX	29.4	1.18	3.36		29.4	1.10	0.00		1
LYHBH4	31.2	1.86	3.03		29.3	1.03	1.72		4
MEDZ4R	26.8	0.19	3.49		27.1	0.11	0.70		4
PUYF4U	23.6	-1.02	3.44		26.7	-0.07	2.35		4
TRKU4J	27.7	0.53	2.11		26.5	-0.17	3.27		4
TZEXCL	23.2	-1.17	2.59		23.3	-1.52	0.60		4
VFWYKV	28.4	0.80	4.62		28.1	0.54	2.41		4
WZ4PBN	25.0	-0.49	1.22		25.4	-0.65	1.91		4
WZJU6F	24.6	-0.65	0.86		25.3	-0.65	0.90		4
X9LMHF	29.9	1.37	2.07		31.3	1.90	1.16		4
XKNTME	28.4	0.80	0.89		28.3	0.60	0.30	L	4
ZZQALC	24.0	-0.87	3.81		26.0	-0.37	1.61		4

Consensus (All Labs) Results

Month Mean	26.29	Grand Mean	26.86
Avg SD	2.74	Avg SD Months	1.99
SD btwn Labs	2.64	SD btwn Labs	2.32
Labs Incld	28	Labs Incld	28

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
23BE3M	21.1	2.08 *	1.48		19.8	0.70	2.21	3	LA
292NCK	17.9	-1.29	0.71	L	21.9	2.43 *	7.86 H	3	LP
39XQ93	19.1	-0.03	1.80		19.8	0.72	1.07	3	GA
3F94YL	18.8	-0.36	0.66	L	18.8	-0.10	0.00	1	LA
3T6XN3	20.1	1.00	1.20		20.0	0.92	0.60	3	LP
6RJ4ZW	20.5	1.36	1.31		20.7	1.43	0.56	3	LA
77XMEJ	17.4	-1.78	1.35		16.1	-2.28 *	1.30	3	LA
7969KV	18.6	-0.55	1.12		18.4	-0.38	0.66	3	LP
79PMDF	18.7	-0.44	1.42		19.1	0.14	1.10	3	LP
7GG7P3	18.2	-0.91	1.31		18.2	-0.53	0.04 L	3	LP
7YT4HD	18.4	-0.79	1.10		18.4	-0.44	0.00	1	LA
88LMNY	20.0	0.85	1.57		19.4	0.41	0.93	3	LA
98JC8M	18.7	-0.44	1.77		21.3	1.94 *	5.22 H	3	LP
AX9ALL	20.3	1.20	2.95	H	19.0	0.11	1.16	3	LA
BEC8HP	19.6	0.46	1.56		18.5	-0.29	0.90	3	TL
C8AACY	17.7	-1.45	1.73		18.4	-0.40	0.88	3	TP
CRW7MX	20.3	1.25	2.03		19.2	0.27	1.03	3	LP
DDB6E6	19.6	0.48	2.16		19.9	0.81	1.94	3	GA
ECW3XP	15.4	-3.89 X	1.54		16.3	-2.15 *	1.29	2	LA
FN3JHY	18.4	-0.73	1.17		18.5	-0.32	0.98	3	LA
FZYPBX	19.3	0.18	2.00		19.2	0.23	2.34	3	TD
HAW4CL	19.4	0.30	0.64	L	18.7	-0.18	1.04	2	LA
JNQ6CZ	20.0	0.85	1.46		18.9	0.01	0.91	3	LA
JU27MW	18.8	-0.34	2.25		18.3	-0.52	2.35	3	XX
JVUVAX	21.6	2.51 *	1.26		21.6	2.17 *	0.00	1	LA
LYHBH4	17.9	-1.24	1.26		17.2	-1.36	0.98	2	LA
MEDZ4R	18.6	-0.51	0.69	L	18.8	-0.10	0.60	3	LA
PUYF4U	19.0	-0.13	3.37	H	18.7	-0.19	0.31 L	3	XX
PZ6YK8	18.8	-0.36	2.05		18.1	-0.68	1.00	3	LA
QNDMTU	19.8	0.69	0.89		19.2	0.26	0.73	3	LA
TRKU4J	18.9	-0.26	1.54		18.2	-0.56	0.70	3	LA
TWV8LH	19.0	-0.13	2.05		18.2	-0.60	1.89	3	GG
V9KQB8	18.0	-1.12	1.95		18.2	-0.56	0.52	3	LP
VFWYKV	18.4	-0.74	2.21		18.1	-0.63	0.40	2	TP
WZJU6F	18.5	-0.61	2.30		18.0	-0.77	0.53	3	TP
ZZQALC	20.1	0.98	1.06		19.5	0.48	1.32	3	LP

Consensus (All Labs) Results

Month Mean	19.13	Grand Mean	18.90
Avg SD	1.70	Avg SD Months	2.01
SD btwn Labs	0.97	SD btwn Labs	1.23
Labs Incld	35	Labs Incld	36

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision #4320 Densometer
LA	L&W Autoline	LP	L&W Air Permeance Tester SE 166
TD	TMI Gurley Densometer	TL	Teledyne Gurley Densometer #4110, Oil Flotation
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
23BE3M	59.9 H	60.3	57.0 H	54.4 H	57.9	0.10	6.5	2.7	57.9	0.10	6.5	2.7	4	TU
292NCK	55.7	60.3	59.4 H	57.8	58.3	0.19	5.2	2.0	58.3	0.19	5.2	2.0	4	LZ
34FMAK	55.9	55.0	54.4	55.2	55.1	-0.59	3.1	0.6	55.1	-0.59	3.1	0.6	4	TH
38NGKC	61.8	61.4 L	61.3 L	62.2	61.7	1.01	1.8	0.4	61.7	1.01	1.8	0.4	4	TU
3FRV34	46.8 X	46.8 XH	47.8 X	45.4 X	46.7	-2.65 *	4.0	1.0	46.7	-2.65 *	4.0	1.0	4	TC
3T6XN3	56.9	54.9	58.7	56.5	56.8	-0.19	3.3	1.6	56.8	-0.19	3.3	1.6	4	LD
6RJ4ZW	53.1	49.3 *	51.1 *	51.1 *	51.1	-1.57	3.1	1.5	51.1	-1.57	3.1	1.5	4	LD
7GG7P3	No Data	No Data	No Data	50.6 *H	50.6	-1.69	7.2	0.0	50.6	-1.69	7.2	0.0	1	LD
7YT4HD	54.3	33.6 X	51.6 *	No Data	46.5	-2.70 *	3.6	11.2 H	46.5	-2.70 *	3.6	11.2 H	3	MB
88LMNY	54.7	55.2	56.3	52.9	54.8	-0.67	3.4	1.4	54.8	-0.67	3.4	1.4	4	LC
98JC8M	No Data	66.3 *	61.6	63.8	63.9	1.57	4.1	2.3	63.9	1.57	4.1	2.3	3	LD
AZ3VFC	58.7	60.0	58.2	58.0	58.7	0.29	3.9	0.9	58.7	0.29	3.9	0.9	4	TJ
C8AACY	61.6	59.1	No Data	57.2	59.3	0.44	3.6	2.2	59.3	0.44	3.6	2.2	3	LD
CF2RPL	54.3	55.6	55.9	55.2	55.3	-0.56	3.0	0.7	55.3	-0.56	3.0	0.7	4	LD
CRW7MX	56.1	55.0 L	57.6	60.0	57.2	-0.09	3.1	2.1	57.2	-0.09	3.1	2.1	4	LD
DDB6E6	58.7 L	58.8	58.9	59.8	59.0	0.37	2.7	0.5	59.0	0.37	2.7	0.5	4	LD
ECW3XP	55.5	57.0 H	56.6	55.3	56.1	-0.35	3.8	0.8	56.1	-0.35	3.8	0.8	4	LD
EDQRGK	60.4	60.8	58.8	59.4	59.9	0.57	2.8	0.9	59.9	0.57	2.8	0.9	4	LC
EL4KU2	66.9 *	68.0 *	64.9 *	64.6 *	66.1	2.10 *	4.5	1.7	66.1	2.10 *	4.5	1.7	4	LC
F8VJBG	60.1	57.5	58.9	61.0	59.4	0.45	3.9	1.5	59.4	0.45	3.9	1.5	4	LD
FN3JHY	54.7	55.2	56.3	52.9	54.8	-0.67	3.4	1.4	54.8	-0.67	3.4	1.4	4	XX
HE8BKD	62.1	60.6	60.6	60.1	60.9	0.82	2.3	0.8	60.9	0.82	2.3	0.8	4	LD
HQ37AU	60.8	60.5	60.4	60.8	60.6	0.76	2.6	0.2 L	60.6	0.76	2.6	0.2 L	4	LD
JCV3ZJ	57.4	59.5	58.1	56.8	58.0	0.11	4.0	1.2	58.0	0.11	4.0	1.2	4	LD
JDCW3E	55.8	59.6	57.6	55.8	57.2	-0.09	3.1	1.8	57.2	-0.09	3.1	1.8	4	EN
JJGVD6	52.3	55.5	55.0	52.1	53.7	-0.93	3.2	1.8	53.7	-0.93	3.2	1.8	4	LD
JNQ6CZ	58.6	58.4	58.2	58.8	58.5	0.24	2.3	0.2 L	58.5	0.24	2.3	0.2 L	4	LD
JVUVAX	59.4	55.8	57.2	57.3	57.5	-0.02	3.9	1.5	57.5	-0.02	3.9	1.5	4	LC
L9CHCV	61.0	56.4	58.6 L	55.7	57.9	0.10	2.8	2.4	57.9	0.10	2.8	2.4	4	LZ
LJ7YQA	49.0 *	48.4 *	48.7 X	50.6 *	49.2	-2.04 *	2.9	1.0	49.2	-2.04 *	2.9	1.0	4	LD
LYHBH4	59.8	61.4	62.1	61.7	61.3	0.91	3.8	1.0	61.3	0.91	3.8	1.0	4	LD
NJ23MH	55.7	56.0	55.2	55.1	55.5	-0.49	3.6	0.4	55.5	-0.49	3.6	0.4	4	EM
NM7LTQ	60.9	59.4	60.9	60.1	60.3	0.69	2.7	0.7	60.3	0.69	2.7	0.7	4	LC
NQZR4M	54.5	55.0	52.7	55.3	54.4	-0.77	3.5	1.2	54.4	-0.77	3.5	1.2	4	LC
Q2X87W	55.1	57.4	58.5	58.5	57.4	-0.03	4.7	1.6	57.4	-0.03	4.7	1.6	4	TG

	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
QGRYPC	62.4	61.7	60.0	60.1	61.1	0.87	3.8	1.2	61.1	0.87	3.8	1.2	4	EM
R9P2JK	63.6 L	60.7 L	64.3 *L	62.3 L	62.7	1.28	0.9	1.6	62.7	1.28	0.9	1.6	4	TD
TZEXCL	57.9	56.3	55.6	56.2	56.5	-0.25	3.4	1.0	56.5	-0.25	3.4	1.0	4	LZ
TZUJHH	56.3	55.0	56.2	56.8	56.1	-0.35	3.6	0.8	56.1	-0.35	3.6	0.8	4	LC
V9KQB8	55.9	59.9	58.3 H	56.6	57.7	0.04	3.9	1.8	57.7	0.04	3.9	1.8	4	LD
VAEC8J	69.4 X	66.7 *	68.6 X	63.3	67.0	2.32 *	4.4	2.7	67.0	2.32 *	4.4	2.7	4	MB
WZJU6F	61.4	56.3	57.4	58.7	58.4	0.23	4.6	2.2	58.4	0.23	4.6	2.2	4	LC
X9LMHF	54.1	56.4	55.1	58.2	55.9	-0.38	4.2	1.8	55.9	-0.38	4.2	1.8	4	LD
XFT2G4	60.5 L	60.3 L	60.4	60.5 L	60.4	0.71	1.4	0.1 L	60.4	0.71	1.4	0.1 L	4	LD
XXNU32	60.0	58.9	59.3	59.8	59.5	0.49	2.8	0.5	59.5	0.49	2.8	0.5	4	LD
YJ3Q4J	58.0	57.2	55.0	59.2	57.4	-0.04	3.4	1.8	57.4	-0.04	3.4	1.8	4	LD
YRHBLN	53.3	53.4	55.1	55.5	54.3	-0.78	3.7	1.2	54.3	-0.78	3.7	1.2	4	LC
ZDDGMK	53.6	57.6	55.1	55.8	55.5	-0.49	3.9	1.7	55.5	-0.49	3.9	1.7	4	MB
ZJ4MMF	58.5	58.7	57.6	59.2	58.5	0.24	3.5	0.7	58.5	0.24	3.5	0.7	4	LD
ZLL68K	57.6	56.9	56.1	57.2	57.0	-0.14	3.1	0.6	57.0	-0.14	3.1	0.6	4	TH
ZY8GHU	64.8 *	63.9	64.0 *	62.5	63.8	1.54	3.4	1.0	63.8	1.54	3.4	1.0	4	LC
ZZQALC	57.5	59.2	57.4	57.3	57.8	0.08	3.8	0.9	57.8	0.08	3.8	0.9	4	LZ

Consensus (All Labs) Results

Wk Mean	57.86	58.22	57.86	57.71	Month Mean	57.52	Grand Mean	57.52
Avg SDr	3.55	3.65	3.59	3.50	Avg SD	3.67	Avg SD	3.67
SD btwn Labs	3.54	3.72	2.98	3.36	SD btwn Labs	4.08	SD btwn Labs	4.08
Labs Incld	48	49	47	50	SD btwn Wks	2.12	SD btwn Wks	2.12
Labs Excld	2	2	3	1	Labs Incld	52	Labs Incld	52
Labs not Rcvd	2	1	2	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
TC	TMI Monitor/Compression Tester, 17-37	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 250

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

TAPPI Official Test Method T843

	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
292NCK	67.9	68.4	69.2	68.3	68.5	0.07	3.3	0.6	68.5	0.07	3.3	0.6	4	LZ
3T6XN3	70.9	73.2	75.1	70.7	72.5	1.36	3.6	2.1	72.5	1.36	3.6	2.1	4	LD
6RJ4ZW	67.1	65.0	70.4	72.4	68.7	0.15	3.8	3.3	68.7	0.15	3.8	3.3	4	LD
88LMNY	57.4 XH	57.2 XH	61.6 *H	65.4 H	60.4	-2.54 *	7.9	3.9 H	60.4	-2.54 *	7.9	3.9 H	4	XX
98JC8M	No Data	68.9	67.8	68.2	68.3	0.01	2.8	0.6	68.3	0.01	2.8	0.6	3	LD
C8AACY	66.8	70.5	No Data	68.9	68.7	0.16	2.9	1.8	68.7	0.16	2.9	1.8	3	LD
CRW7MX	66.2	64.4	69.0	71.4	67.7	-0.17	2.5	3.1	67.7	-0.17	2.5	3.1	4	LD
EDQRGK	73.8 *	73.0	73.3	72.7	73.2	1.60	4.0	0.5	73.2	1.60	4.0	0.5	4	LD
JNQ6CZ	70.8	70.5	70.3	70.7	70.6	0.75	2.8	0.2 L	70.6	0.75	2.8	0.2 L	4	LD
JU27MW	66.9	66.3	66.2	66.5	66.5	-0.58	2.6	0.3 L	66.5	-0.58	2.6	0.3 L	4	LZ
JVUVAX	67.4	65.0	63.8	63.9	65.0	-1.04	3.0	1.7	65.0	-1.04	3.0	1.7	4	LD
L9CHCV	67.0	69.3	69.1	70.2	68.9	0.21	3.2	1.4	68.9	0.21	3.2	1.4	4	LZ
MDLY6V	68.6	69.8	64.2	65.7	67.1	-0.37	3.0	2.6	67.1	-0.37	3.0	2.6	4	TH
R9P2JK	69.6 L	71.4 L	72.6 L	70.2 L	70.9	0.87	1.0	1.4	70.9	0.87	1.0	1.4	4	TD
V9KQB8	68.6	67.2	71.9	67.1	68.7	0.15	3.9	2.2	68.7	0.15	3.9	2.2	4	LD
VAEC8J	66.6	66.1	64.8	67.4	66.2	-0.65	3.2	1.1	66.2	-0.65	3.2	1.1	4	MB
WG9WQQ	65.7	66.1	65.5	63.8	65.3	-0.96	3.4	1.0	65.3	-0.96	3.4	1.0	4	LD
WZJU6F	68.2	67.1	68.9	71.4	68.9	0.21	3.3	1.8	68.9	0.21	3.3	1.8	4	LC
XFT2G4	73.5 *	73.6 L	73.4 L	73.7 L	73.6	1.71	1.3	0.1 L	73.6	1.71	1.3	0.1 L	4	LD
ZJ4MMF	65.1 L	64.4	66.7	65.6	65.4	-0.91	2.1	1.0	65.4	-0.91	2.1	1.0	4	LD

Consensus (All Labs) Results

Wk Mean	68.36	68.43	68.62	68.70	Month Mean	68.25	Grand Mean	68.25
Avg SDr	3.17	2.94	3.48	3.66	Avg SD	3.45	Avg SD	3.45
SD btwn Labs	2.48	3.04	3.70	2.97	SD btwn Labs	3.10	SD btwn Labs	3.10
Labs Incld	18	19	19	20	SD btwn Wks	1.86	SD btwn Wks	1.86
Labs Excld	1	1	0	0	Labs Incld	20	Labs Incld	20
Labs not Rcvd	1	0	1	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	TH	TMI Compression Tester, Model 17-76
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T822

	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
23P23N	44.3	43.9	41.6	45.0	43.7	0.84	3.7	1.5	43.7	0.84	3.7	1.5	4	LZ
38NGKC	40.5	40.7	41.2 L	41.6	41.0	-0.21	1.5	0.5	41.0	-0.21	1.5	0.5	4	TU
3CYU3B	41.2	42.4	43.2	41.5	42.1	0.21	2.1	0.9	42.1	0.21	2.1	0.9	4	TH
3FRV34	34.7 *H	35.9 *H	35.3 H	34.2 *H	35.0	-2.50 *	5.9	0.7	35.0	-2.50 *	5.9	0.7	4	TC
6BNXEG	41.3	40.2	39.2	42.0	40.7	-0.33	3.7	1.2	40.7	-0.33	3.7	1.2	4	LZ
6RJ4ZW	42.3	42.8	43.5	42.7	42.8	0.50	3.1	0.5	42.8	0.50	3.1	0.5	4	LD
7YT4HD	44.0	48.0 *	34.9	No Data	42.3	0.30	4.1	6.7 H	42.3	0.30	4.1	6.7 H	3	MB
C7GLPW	40.5 H	40.5 H	39.2 H	39.5 H	39.9	-0.61	5.4	0.7	39.9	-0.61	5.4	0.7	4	TX
C8AACY	43.8	43.1	No Data	45.2	44.0	0.95	3.6	1.0	44.0	0.95	3.6	1.0	3	LD
CRW7MX	38.7	40.2	42.1	39.0	40.0	-0.59	3.7	1.6	40.0	-0.59	3.7	1.6	4	LD
DDB6E6	41.8	43.1	41.3	42.5	42.2	0.25	2.6	0.8	42.2	0.25	2.6	0.8	4	LD
ECW3XP	45.9	42.2	44.5	43.2	43.9	0.92	2.9	1.6	43.9	0.92	2.9	1.6	4	LD
EL4KU2	31.6 X	30.4 X	32.1 *	32.2 X	31.6	-3.83 X	3.1	0.8	31.6	-3.83 X	3.1	0.8	4	XX
GXNZU7	44.5	43.8 L	42.1	41.8	43.1	0.59	2.2	1.3	43.1	0.59	2.2	1.3	4	LD
HE8BKD	42.1	42.2 L	42.5	42.1	42.2	0.27	2.3	0.2 L	42.2	0.27	2.3	0.2 L	4	LD
HQ37AU	45.3	45.7	45.5	45.6	45.5	1.55	3.0	0.1 L	45.5	1.55	3.0	0.1 L	4	LD
JJGVD6	39.4	40.9	41.7	38.5	40.1	-0.54	3.3	1.5	40.1	-0.54	3.3	1.5	4	LD
JNQ6CZ	43.3	43.6	42.6	42.5	43.0	0.56	2.4	0.5	43.0	0.56	2.4	0.5	4	LD
NJ23MH	38.1	37.7	39.0	39.4	38.6	-1.14	3.2	0.7	38.6	-1.14	3.2	0.7	4	EM
NQZR4M	41.3	40.7	42.3	39.7	41.0	-0.21	3.4	1.1	41.0	-0.21	3.4	1.1	4	LD
QGRYPC	45.0	45.1 L	45.4	44.7	45.1	1.36	2.3	0.3	45.1	1.36	2.3	0.3	4	LC
TZUJHH	43.7	44.3	41.3	40.0	42.3	0.31	2.5	2.0	42.3	0.31	2.5	2.0	4	LC
V9KQB8	40.3	41.0	43.9	43.2	42.1	0.21	2.1	1.7	42.1	0.21	2.1	1.7	4	LD
VAEC8J	34.1 *	34.1 *	36.0	35.3 *	34.8	-2.57 *	2.9	1.0	34.8	-2.57 *	2.9	1.0	4	MB
WZJU6F	41.1	42.1	46.3	41.8	42.8	0.50	3.0	2.4	42.8	0.50	3.0	2.4	4	LC
ZLL68K	40.2	39.7 L	39.2	40.6	39.9	-0.62	2.0	0.6	39.9	-0.62	2.0	0.6	4	TH

Consensus (All Labs) Results

Wk Mean	41.49	41.75	41.03	41.30
Avg SDr	3.11	3.24	3.37	3.23
SD btwn Labs	2.99	2.99	3.52	2.82
Labs Incld	25	25	25	24
Labs Excld	1	1	0	1
Labs not Rcvd	0	0	1	1

Month Mean	41.52	Grand Mean	41.52
Avg SD	3.24	Avg SD	3.24
SD btwn Labs	2.60	SD btwn Labs	2.60
SD btwn Wks	1.76	SD btwn Wks	1.76
Labs Incld	25	Labs Incld	25

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	TC	TMI Monitor/Compression Tester, 17-37
TH	TMI Compression Tester, Model 17-76	TU	TMI Universal Crush Tester (TMI K440)
TX	TMI Digital Crush Tester (model not specified)	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
23BE3M	13.1 L	12.5 L	12.8 L	13.1 L	12.9	-0.64	0.0	0.3	12.9	-0.64	0.0	0.3	4	LA
34FMAK	13.0 L	13.3	13.2	13.9	13.4	0.16	0.9	0.4	13.4	0.16	0.9	0.4	4	LH
3FRV34	12.9	13.0	12.6	13.1 L	12.9	-0.59	0.9	0.2	12.9	-0.59	0.9	0.2	4	TS
6BNXEG	12.4	13.0	12.2	13.0 L	12.6	-1.01	0.9	0.4	12.6	-1.01	0.9	0.4	4	LA
6RJ4ZW	12.6 L	13.4	13.2	13.5	13.1	-0.18	1.0	0.4	13.1	-0.18	1.0	0.4	4	LA
7YT4HD	12.3	19.9 X	14.0	No Data	15.4	3.48 X	1.0	4.0 H	15.4	3.48 X	1.0	4.0 H	3	LA
AX9ALL	13.2	13.4	13.7	13.6 L	13.5	0.35	1.0	0.2	13.5	0.35	1.0	0.2	4	LA
AZ3VFC	13.6	13.4 L	14.1	13.9 L	13.7	0.81	0.9	0.3	13.7	0.81	0.9	0.3	4	TT
C7GLPW	12.2	12.1 *	12.6	12.4 L	12.3	-1.49	1.0	0.3	12.3	-1.49	1.0	0.3	4	TT
C8AACY	13.4	12.9	No Data	13.1	13.1	-0.21	1.0	0.3	13.1	-0.21	1.0	0.3	3	LB
CF2RPL	14.2	14.0	14.0	14.8 *	14.2	1.61	1.1	0.4	14.2	1.61	1.1	0.4	4	LU
DDB6E6	13.0	13.3	13.7	13.5	13.4	0.20	0.9	0.3	13.4	0.20	0.9	0.3	4	LZ
ECW3XP	13.5	13.4 L	12.8	12.9 L	13.1	-0.19	0.9	0.3	13.1	-0.19	0.9	0.3	4	LA
EDQRGK	14.9 *	14.5 *	14.1	14.0 L	14.3	1.77	0.9	0.4	14.3	1.77	0.9	0.4	4	LB
JJGVD6	12.1	12.8	13.4	12.6 L	12.7	-0.85	1.0	0.5	12.7	-0.85	1.0	0.5	4	LZ
JNQ6CZ	13.2	13.3	13.5	13.2 L	13.3	0.04	1.0	0.1	13.3	0.04	1.0	0.1	4	LB
JVUVAX	13.5	13.0	12.8	12.6 L	13.0	-0.48	1.2	0.4	13.0	-0.48	1.2	0.4	4	LU
LYHBH4	12.8	13.2	13.2	12.7 L	13.0	-0.45	1.2	0.3	13.0	-0.45	1.2	0.3	4	LA
QGRYPC	11.0 *L	13.1 L	12.2	12.5 L	12.2	-1.70	0.9	0.9 H	12.2	-1.70	0.9	0.9 H	4	LB
R9P2JK	20.6 XH	21.4 X	21.2 XH	20.4 XH	20.9	12.48 X	2.4	0.5	20.9	12.48 X	2.4	0.5	4	XX
TVW294	13.2	14.0 H	12.9 L	13.1 L	13.3	0.09	1.1	0.5	13.3	0.09	1.1	0.5	4	LA
WZJU6F	13.5	13.3	13.0	13.0	13.2	-0.09	1.0	0.2	13.2	-0.09	1.0	0.2	4	LU
X9LMHF	13.2	13.1	12.6	13.2 L	13.0	-0.39	1.0	0.3	13.0	-0.39	1.0	0.3	4	LH
XFT2G4	14.5 H	14.6 *H	14.4 H	14.4 H	14.5	2.00 *	3.2	0.1	14.5	2.00 *	3.2	0.1	4	LA
XXNU32	14.7	15.1 X	14.0	14.5 L	14.6	2.13 *	0.9	0.4	14.6	2.13 *	0.9	0.4	4	LB
ZDDGMK	12.2 H	12.8 L	13.2 H	12.9 L	12.8	-0.73	1.9	0.4	12.8	-0.73	1.9	0.4	4	LA
ZZQALC	12.5	13.3	13.7	13.1 H	13.1	-0.19	3.7	0.5	13.1	-0.19	3.7	0.5	4	LB

Consensus (All Labs) Results

Wk Mean	13.10	13.26	13.27	13.30
Avg SDr	1.37	1.33	1.08	1.80
SD btwn Labs	0.87	0.56	0.62	0.63
Labs Incld	26	24	25	25
Labs Excld	1	3	1	1
Labs not Rcvd	0	0	1	1

Month Mean	13.25
Avg SD	1.42
SD btwn Labs	0.61
SD btwn Wks	0.38
Labs Incld	25

Grand Mean	13.25
Avg SD	1.42
SD btwn Labs	0.61
SD btwn Wks	0.38
Labs Incld	25

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)	TS	TMI Monitor/STFI Compression Tester, 17-33
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab

End of Report