Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #577 (L) - October 2017

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	42D2	August 2016-Current
	42D1	April 2015-July 2016
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
24BDD7	731.8	-0.05	45.18		713.1	-0.57	25.13	4	LS
3JKLQF	704.4	-0.62	63.81		701.5	-0.81	12.22	4	LG
6JUEB8	778.0	0.91	22.83		784.0	0.89	6.79	3	LS
73LN93	542.0	-3.97 X	48.12		505.7	-4.86 X	52.61	3	EX
9T47BD	718.6	-0.32	26.63		752.1	0.23	33.38	4	ES
B8JVGT	693.2	-0.85	32.79		680.7	-1.24	20.98	4	TB
BFDYRG	753.4	0.40	34.96		745.4	0.09	13.70	4	LG
C8GJG4	741.0	0.14	106.65 H		904.3	3.38 X	110.00 H	4	LM
DMQMHP	719.8	-0.30	18.89		741.3	0.01	16.03	4	EX
EKE8NN	707.8	-0.54	61.02		722.6	-0.38	18.16	4	ER
HNK4LK	784.8	1.05	47.49		798.8	1.20	39.49	4	ER
KYGN2H	815.3	1.68	18.94		766.3	0.53	33.53	4	LM
RCF7RH	850.0	2.39 *	71.76		832.3	1.89	19.60	4	LH
U8TATH	720.1	-0.29	55.35		705.0	-0.74	16.23	4	TE
VEDUDA	753.8	0.41	52.19		752.5	0.24	37.07	4	LG
VQ2WUG	788.8	1.13	90.06		849.8	2.25 *	76.46 H	4	LL
X2Z38F	646.0	-1.82	25.13		680.2	-1.25	37.03	4	ER
XN9MY7	891.1	3.24 X	71.78		798.0	1.18	67.49	4	LG
XUCLAV	726.6	-0.16	23.23		703.9	-0.76	32.13	4	LG
YCQKRX	726.8	-0.15	18.39		724.2	-0.34	32.70	4	ET
YN9XCN	713.8	-0.42	20.95		744.3	0.07	43.34	4	ER
ZAKCA7	668.2	-1.36	27.47		669.4	-1.48	6.70	4	LL
ZEBTE6	668.6	-1.35	93.52		705.7	-0.73	43.31	3	LH
ZVY8TW	740.8	0.14	9.03 L		726.7	-0.29	11.78	4	LS

Consensus (All Labs) Results

Month Mean	734.16	Grand Mean	740.79
Avg SD	51.47	Avg SD Months	34.16
SD btwn Labs	48.39	SD btwn Labs	48.34
Labs Incld	22	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	728.46	63.40	5.70	7
Clip sealing	736.82	42.02	2.66	15

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
24BDD7	38.0	0.63	1.25		37.9	0.53	0.55	4	LC
3JKLQF	39.1	0.95	1.40		39.8	1.13	1.22	4	TX
6JUEB8	35.7	-0.09	1.54		33.6	-0.89	1.84	3	EM
BFDYRG	40.8	1.49	1.15		40.5	1.38	0.37	4	LE
PAZ2VH	32.4	-1.13	1.03	L	32.2	-1.33	1.19	4	WK
PPNBHK	32.3	-1.14	4.98	H	30.1	-2.03 *	2.81	4	XX
RCF7RH	33.5	-0.79	0.71	L	33.3	-1.00	0.74	4	TC
X2Z38F	33.0	-0.94	3.65		34.1	-0.73	0.95	3	EN
XRAQN8	39.8	1.17	1.58		38.0	0.54	2.85	4	LC
ZVY8TW	35.5	-0.15	2.60		37.4	0.36	2.01	4	EM

Consensus (All Labs) Results

Month Mean	35.99	Grand Mean	36.30
Avg SD	2.37	Avg SD Months	1.50
SD btwn Labs	3.22	SD btwn Labs	3.07
Labs Incld	10	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
TC	TMI Monitor/Compression Tester, Model 17-37	TX	TMI (model not specified)
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
24BDD7	43.0	1.02	1.90		41.8	0.57	1.33	4	LC
3JKLQF	41.5	0.22	1.45		40.9	0.14	1.42	4	TX
4L8KK4	40.5	-0.34	1.01		38.8	-0.90	2.48	2	EM
6JUEB8	39.5	-0.88	1.08		39.5	-0.54	0.27 L	3	EM
73LN93	41.8	0.37	1.12		38.1	-1.21	3.89 H	4	CT
9T47BD	40.2	-0.50	1.18		38.6	-0.95	1.33	4	LD
9WPQJ3	44.9	2.06 *	1.15		43.4	1.32	2.32	4	TK
B8JVGT	50.9	5.42 X	1.88		46.0	2.57 *	3.86 H	4	LD
BFDYRG	41.0	-0.08	1.62		40.2	-0.19	0.55	4	LY
BN89VK	41.2	0.03	1.10		41.0	0.17	0.55	4	TD
C8GJG4	43.8	1.49	1.37		42.3	0.78	1.10	4	EM
CNZJ4T	43.4	1.26	0.76		43.3	1.26	0.48	4	TL
DMQMHP	42.8	0.94	1.20		40.7	0.02	1.70	4	LD
EUL7XP	34.8	-3.52 X	2.58 H		38.0	-1.26	4.16 H	4	LC
HNK4LK	38.9	-1.24	1.13		39.9	-0.34	0.88	4	EM
JTAZLV	39.1	-1.14	0.98		39.5	-0.54	0.61	4	LD
KW8NWB	48.0	3.78 X	2.22 H		45.6	2.36 *	3.19	4	LD
KYGN2H	47.2	3.37 X	0.71		43.5	1.39	2.58	4	TG
M6FY38	40.2	-0.51	1.14		40.2	-0.22	1.45	3	TD
MTJ93L	41.8	0.39	1.03		43.5	1.35	1.56	4	TG
MXWYKA	42.0	0.45	1.15		41.9	0.61	0.87	4	EM
MZZKFM	40.5	-0.35	1.98		39.9	-0.35	0.91	4	TD
PAZ2VH	36.7	-2.46 *	1.20		36.1	-2.18 *	0.64	4	WK
Q4Q3ZH	41.1	-0.04	1.53		40.3	-0.14	0.80	4	LD
R47NAK	40.2	-0.54	0.94		39.2	-0.68	0.85	4	LC
RCF7RH	38.3	-1.55	0.93		39.3	-0.64	1.84	4	TX
TEGFCK	39.2	-1.06	0.92		37.8	-1.36	1.05	4	TB
U8TATH	42.5	0.76	0.94		42.8	1.04	0.48	4	LD
UC77JD	41.5	0.20	1.38		40.9	0.15	0.53	4	LD
VEDUDA	40.0	-0.62	1.24		39.6	-0.47	0.35	4	EM
VQ2WUG	43.0	1.04	1.17		40.4	-0.12	1.95	4	BU
X2Z38F	38.1	-1.69	1.26		38.3	-1.09	0.50	4	EN
XH42TN	40.6	-0.31	0.83		39.3	-0.61	1.49	4	LD
XLPLZD	43.0	1.05	1.90		41.9	0.63	1.12	4	TD
XN9MY7	41.0	-0.09	1.32		41.4	0.37	1.70	4	MK
XRAQN8	42.8	0.93	1.42		41.7	0.52	1.19	4	LC
XUCLAV	40.2	-0.49	2.36 H		40.0	-0.30	0.83	4	TJ
YCQKRX	42.9	0.99	1.38		40.9	0.14	1.64	4	TD
YN9XCN	38.9	-1.25	1.52		39.1	-0.75	0.92	4	LD

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
ZAKCA7	39.8	-0.75	1.49	39.0	-0.76	0.50	4	LC
ZEBTE6	42.4	0.69	1.70	39.1	-0.71	2.83	3	EM
ZEDEBK	42.1	0.54	2.04	39.7	-0.44	1.78	4	LD
ZVY8TW	43.8	1.45	1.35	43.2	1.25	1.18	4	EM

Consensus (All Labs) Results

Month Mean	41.13	Grand Mean	40.63
Avg SD	1.36	Avg SD Months	1.73
SD btwn Labs	1.81	SD btwn Labs	2.09
Labs Incld	39	Labs Incld	42

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LY	L&W 830	MK	Mark-10 ESM303
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
TX	TMI (model not specified)	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
24BDD7	104.9	102.8	105.0	104.9	104.4	-1.38	11.2	1.1	105.6	-1.18	11.2	2.7	16	AH
27HVAG	110.7	111.1	110.5	110.2	110.6	0.39	11.5	0.4 L	109.6	0.14	10.5	1.1	16	LA
2JPQK7	112.7 L	108.7 L	111.2 L	112.4 L	111.3	0.57	3.8	1.8	112.2	1.01	3.9	1.3	16	XX
3CZLB3	103.8	109.2	107.1	106.8	106.7	-0.72	9.8	2.2	105.2	-1.30	12.2	2.8	15	LC
3P98Y2	113.6	111.7	108.9	107.4	110.4	0.33	12.6	2.8	111.0	0.60	12.3	3.2	16	LC
62TNFX	108.1 L	105.5	106.6	108.2 L	107.1	-0.62	4.6	1.3	107.5	-0.54	5.4	1.5	12	LA
73LN93	112.1	115.6	117.3 *	114.3	114.8	1.59	14.3	2.2	113.8	1.54	13.1	3.1	16	XX
8RH6V6	108.9	103.6	108.7	112.6	108.5	-0.22	10.5	3.7	108.8	-0.13	10.9	3.1	16	LC
9EAJ87	115.4	111.7	111.0	112.8	112.7	0.99	12.8	1.9	113.1	1.30	11.6	2.0	16	AX
9T47BD	106.7	108.4	109.1	105.1	107.3	-0.55	10.1	1.8	106.9	-0.74	11.0	1.6	16	LA
ANC9FU	101.1 *	107.7	94.8 X	97.9 *	100.4	-2.52 *	7.7	5.5	104.0	-1.70	8.1	5.6	12	AH
AXG9X9	107.5	110.3	108.5	106.4	108.2	-0.30	8.8	1.6	108.6	-0.19	8.9	1.5	16	LA
BFDYRG	117.0 *	112.8	112.7	111.9	113.6	1.25	14.0	2.3	112.3	1.05	15.7	2.9	14	LZ
CN34Z9	102.7	110.4	103.6	104.1	105.2	-1.15	12.0	3.5	105.6	-1.18	10.9	2.5	13	LC
CZJNJ6	108.7	103.2	104.8	106.7	105.9	-0.97	10.9	2.4	113.4	1.41	9.3	5.1	16	LC
D28KNP	111.9 H	112.1	113.0	112.2	112.3	0.87	14.0	0.5 L	111.7	0.86	13.6	2.4	16	LA
DMQMHP	113.0 L	114.0	107.5	108.5	110.8	0.43	8.7	3.2	115.1	1.99 *	9.8	5.1	15	AH
EKE8NN	102.2	101.3 *	101.1 *	104.6	102.3	-1.97 *	10.8	1.6	103.4	-1.93	10.8	1.9	15	LZ
EUL7XP	108.9	111.2	109.2	114.4	110.9	0.48	10.5	2.5	108.9	-0.09	11.2	3.6	16	LA
FW3VWT	108.2	109.3	110.8	110.7	109.8	0.14	11.5	1.2	109.3	0.05	10.5	3.7	16	LC
HHY9JV	112.9	116.9	115.3	113.9	114.7	1.56	11.9	1.7	111.6	0.80	11.3	3.7	15	TB
HKKTQK	107.7	116.1	116.2	111.4	112.9	1.03	10.5	4.1	110.9	0.58	11.2	3.1	12	LZ
JTAZLV	108.5	103.1	109.5	107.7	107.2	-0.58	9.4	2.8	104.3	-1.60	8.8	3.4	16	LA
KF3EYW	110.4	111.3	109.5	110.7	110.5	0.35	13.6	0.7	109.5	0.12	10.6	2.9	16	LB
KNXCLY	107.2	101.8	105.8	105.1	105.0	-1.22	10.2	2.3	104.1	-1.69	8.4	2.5	16	LC
KVV6UT	112.3	119.7 *	116.4 H	119.1 *	116.9	2.17 *	14.6	3.4	116.5	2.44 *	12.1	3.3	16	LA
LFWKRV	113.6	110.7	110.9	115.2	112.6	0.95	11.2	2.2	112.4	1.09	9.6	3.1	16	LC
LQJFTW	110.7	106.5	109.2	108.2	108.7	-0.17	12.3	1.8	108.8	-0.12	11.9	3.4	16	LC
LRTQLU	105.8	113.5	111.7	115.2	111.6	0.66	11.6	4.1	107.4	-0.59	10.5	3.5	16	LA
LYA4NY	107.9	111.2	104.5	109.2	108.2	-0.30	10.8	2.8	107.5	-0.56	10.5	3.0	16	TB
LYTURR	108.1	109.8	108.2 L	110.1	109.1	-0.06	5.4	1.0	108.6	-0.18	4.9	1.1	16	AH
MDRB2Q	107.8	110.1	110.9	108.5	109.3	0.02	7.6	1.4	109.5	0.10	9.9	4.3	16	LA
MPG93N	108.5	108.4	108.7	108.7	108.6	-0.19	9.8	0.1 L	108.8	-0.12	8.5	0.4 L	16	LJ
NCN7YM	110.7	108.3	114.3	113.9	111.8	0.73	10.7	2.8	110.2	0.35	10.0	2.9	16	LA
PTUUPT	103.1	105.2	106.4	104.7	104.8	-1.26	11.0	1.4	104.8	-1.44	10.7	2.7	16	LA

Containerboard Interlaboratory Testing Program
Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42D2
TAPPI Official Test Method T807

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October 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
Q4Q3ZH	111.5	113.0	111.4	112.5	112.1	0.81	8.8	0.8	111.8	0.86	9.9	1.0	16	LA
Q88K4K	111.2	108.5	111.7	108.6	110.0	0.22	7.6	1.7	111.7	0.86	10.4	4.6	16	LJ
QBPPT4	103.0	107.9	104.5	105.2	105.2	-1.17	12.0	2.1	107.1	-0.68	10.5	3.4	16	XX
QEMBHK	117.4 *L	119.6 *L	116.0 L	115.8 L	117.2	2.26 *	4.3	1.8	108.1	-0.34	4.9	5.6	16	RE
QU288U	109.0	108.9	101.7	108.1	106.9	-0.66	10.2	3.5	105.5	-1.22	12.2	2.8	14	LC
RCF7RH	109.5	108.8	112.5	109.5	110.1	0.23	12.0	1.7	110.6	0.49	11.5	4.7	16	AA
TQR8FK	107.6	108.5	110.3	106.9	108.3	-0.26	6.1	1.5	109.2	0.03	6.1	1.4	16	TP
U4EPUA	112.4	110.5	108.6	106.9	109.6	0.10	12.3	2.4	110.2	0.35	12.1	2.1	16	LA
UC77JD	117.4 *	113.6	107.9	115.1	113.5	1.21	10.5	4.0	111.6	0.82	10.4	4.0	16	AA
W86NDW	107.3	107.9	106.1	126.4 X	111.9	0.76	13.6	9.7 H	111.1	0.63	12.9	5.4	16	LA
W9GM87	108.2	113.5	107.0	99.6 *	107.1	-0.62	9.2	5.7	107.0	-0.72	10.8	6.5	16	LC
WPQ8CP	104.6	104.3	99.0 *	108.7	104.2	-1.45	9.5	4.0	105.6	-1.18	9.7	4.0	16	LC
WZP3C7	111.6	107.8	107.6	109.6	109.2	-0.02	11.4	1.9	109.7	0.16	10.3	2.0	16	LA
X2GFBH	109.5	107.8	105.0	110.4	108.2	-0.30	8.0	2.4	109.0	-0.05	9.4	2.7	16	TB
XFXEH6	104.0	108.8	109.2	101.1	105.8	-0.99	10.2	3.9	108.4	-0.24	10.0	4.0	16	LC
YN9XCN	107.1	109.8	101.8	106.1	106.2	-0.87	8.9	3.3	106.4	-0.91	9.6	3.0	16	AH
Z2BNUL	114.7	102.9	113.7	117.4	112.2	0.83	11.1	6.4	112.5	1.10	11.0	3.2	16	AH
ZEDEBK	101.0 *	117.0	105.4	94.9 X	104.6	-1.33	8.9	9.3 H	107.3	-0.62	8.7	7.2 H	16	LC
ZRLXAE	110.1	115.3	114.1	112.2	112.9	1.05	13.1	2.3	113.5	1.44	12.2	2.5	16	LZ
ZVY8TW	108.1	106.8	111.1	109.0	108.7	-0.15	11.0	1.8	106.4	-0.92	9.9	6.4	16	LA

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4		Month		Cumulative
Wk Mean	109.07	109.71	109.05	109.37	Month Mean	109.25	Grand Mean	109.16
Avg SDr	10.74	10.52	10.48	10.80	Avg SD	10.63	Avg SD	10.45
SD btwn Labs	3.96	4.26	4.07	4.31	SD btwn Labs	3.51	SD btwn Labs	3.01
Labs Incld	55	55	54	53	SD btwn Wks	3.24	SD btwn Wks	3.52
Labs Excld	0	0	1	2	Labs Incld	55	Labs Incld	55
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

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

	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
24BDD7	94.5	91.6	87.0	90.3	90.9	-0.47	8.1	3.1	89.7	-0.68	8.0	2.7	12	AH
27HVAG	92.3	93.5	87.0	89.2 L	90.5	-0.59	8.0	3.0	90.3	-0.48	8.1	1.9	12	LA
2JPQK7	95.5	92.0	91.5	92.8 L	93.0	0.19	4.2	1.8	92.2	0.10	4.4	2.5	12	XX
3CZLB3	92.6	96.0	89.4	90.4	92.1	-0.08	8.8	2.9	90.7	-0.36	8.8	2.6	12	LC
3P98Y2	94.2	92.4	97.6	92.4	94.1	0.56	9.6	2.5	94.6	0.89	9.0	3.4	12	LC
62TNFX	91.7	91.8	91.2 L	91.2 L	91.5	-0.27	3.6	0.3 L	88.5	-1.05	5.7	4.2	12	LA
73LN93	100.2 *	97.7	94.2	96.0	97.0	1.47	9.7	2.6	95.5	1.17	9.9	2.8	12	XX
8RH6V6	89.1 L	87.7	89.2	91.5	89.4	-0.93	7.1	1.6	90.9	-0.29	7.1	2.2	12	LC
9EAJ87	95.1	94.9	91.8	93.2	93.8	0.44	8.4	1.6	94.1	0.71	8.7	2.4	12	AX
9T47BD	89.1	90.8	88.3	94.8	90.8	-0.50	8.2	2.9	89.4	-0.77	8.4	2.6	12	LA
ANC9FU	90.1 L	91.7	91.6	84.8	89.5	-0.88	6.1	3.2	90.5	-0.44	7.3	2.7	12	AH
AXG9X9	90.7	92.1	92.1	91.4	91.6	-0.24	9.2	0.7	88.9	-0.93	8.2	4.7	12	LA
BFDYRG	93.2	93.2	96.3	99.6	95.6	1.01	10.6	3.0	95.2	1.08	10.3	2.6	11	LZ
CN34Z9	89.8	88.7	90.1	91.4	90.0	-0.74	9.8	1.1	91.2	-0.20	9.4	2.8	12	LC
CZJNJ6	91.0	91.8	88.4	78.2 XL	87.4	-1.57	6.5	6.3 H	90.3	-0.49	7.0	4.9	12	LA
D28KNP	96.3	98.7 *	93.0	95.9	96.0	1.14	8.7	2.3	94.1	0.72	9.8	3.7	12	LA
DMQMHP	89.0	92.0	88.5	93.5	90.8	-0.50	7.4	2.4	96.1	1.34	8.5	5.4	12	AH
EKE8NN	89.4	87.3	86.6	86.2	87.4	-1.56	9.2	1.4	87.1	-1.50	8.8	1.9	12	LA
EUL7XP	90.4	94.8	92.7	94.9	93.2	0.27	9.2	2.1	93.0	0.37	8.9	2.1	12	LA
FW3VWT	88.0	90.3	89.1	96.1	90.9	-0.46	7.5	3.6	90.7	-0.36	8.6	3.1	12	LC
HHY9JV	95.3	95.0	92.2	92.5	93.8	0.44	10.0	1.6	93.2	0.42	8.8	2.9	12	TB
HKKTQK	90.8	95.6	91.0	93.9	92.8	0.16	8.8	2.3	91.8	-0.01	8.8	2.6	8	LZ
JTAZLV	90.0	88.8	85.9	88.0	88.2	-1.32	5.1	1.7	86.4	-1.72	5.9	2.7	12	LA
KF3EYW	89.6	89.1	88.3	89.1	89.0	-1.05	8.0	0.6	89.3	-0.80	7.5	1.7	12	LB
KNXCLY	86.2	86.8	90.7	90.9	88.7	-1.16	8.1	2.5	88.2	-1.15	7.2	2.9	12	LA
KVV6UT	97.1	102.7 X	99.4	101.0	100.0	2.43 *	7.5	2.4	98.8	2.23 *	7.5	2.2	12	LA
LFWKRV	96.0	97.2	96.9	93.8	96.0	1.15	10.2	1.5	96.2	1.37	9.0	2.0	12	LC
LQJFTW	86.8	88.4	86.8 H	84.1 *	86.5	-1.83	9.8	1.8	88.9	-0.93	8.4	3.1	12	LC
LRTQLU	88.6	94.8	99.9 *	93.1	94.1	0.55	8.1	4.7	90.7	-0.36	6.4	4.1	12	LA
LYA4NY	91.3	90.2	85.7	94.3	90.4	-0.62	9.0	3.6	92.7	0.29	9.5	3.7	12	TB
LYTURR	89.1	89.1	89.8	91.1	89.8	-0.81	4.0	0.9	84.9	-2.20 *	4.2	6.7	12	AH
MDRB2Q	91.2	86.5	87.4	86.9	88.0	-1.37	7.0	2.1	90.8	-0.35	7.7	2.8	12	LA
MPG93N	91.3	91.7	91.9	91.6	91.6	-0.23	7.0	0.3 L	90.5	-0.42	6.5	1.5	12	LJ
NCN7YM	96.9	93.6	92.3	98.5	95.3	0.94	8.2	2.9	92.5	0.21	8.5	3.7	12	LA
PTUUPT	88.1	87.7	88.8	89.6	88.5	-1.20	8.0	0.8	88.1	-1.20	7.6	3.9	12	LA

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

Report #577 (L)
October 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
Q4Q3ZH	92.1	92.7 L	91.1	92.6	92.1	-0.07	5.8	0.7	93.3	0.47	7.5	2.7	12	LA
Q88K4K	88.7	96.1	98.9	102.5 *	96.6	1.33	6.2	5.8 H	94.0	0.67	7.9	5.1	12	LJ
QBPPT4	90.2	88.4	94.2	91.0	91.0	-0.44	9.3	2.4	93.5	0.51	8.3	2.6	12	XX
QEMBHK	91.1	93.1	92.8	95.2	93.1	0.22	5.7	1.7	94.8	0.93	5.1	2.0	12	RE
QU288U	94.6	89.6	88.8 H	92.3	91.3	-0.32	9.0	2.7	90.0	-0.59	9.1	3.3	12	LC
RCF7RH	97.0	91.5	99.8	99.0	96.8	1.41	6.2	3.7	96.0	1.33	7.5	2.7	8	AA
TQR8FK	88.8	87.8	91.6	87.6	89.0	-1.07	4.4	1.8	85.4	-2.06 *	4.9	6.4	12	TP
U4EPUA	97.2	94.2	93.7	97.6	95.7	1.05	8.7	2.0	94.5	0.84	8.5	2.9	12	LA
UC77JD	95.7	97.2	93.2 H	98.3	96.1	1.18	11.3	2.2	93.7	0.58	9.3	3.4	12	AA
W86NDW	94.7	91.4	97.5	100.3	96.0	1.14	8.1	3.8	95.0	1.02	9.2	6.2	12	XX
W9GM87	98.8	92.0	91.6	96.3	94.7	0.74	6.9	3.5	90.4	-0.46	7.5	4.0	11	LC
WPQ8CP	86.9	89.6	96.0	92.2	91.2	-0.37	7.2	3.9	92.2	0.11	8.8	3.4	12	LC
WZP3C7	93.1	93.2	97.1	99.3	95.6	1.04	9.2	3.1	91.5	-0.11	8.5	9.2 H	12	LA
X2GFBH	94.9	96.1	98.4	101.3	97.7	1.67	8.6	2.8	98.8	2.20 *	8.0	2.6	12	TB
YN9XCN	89.5	90.0	93.3	86.2	89.8	-0.82	6.8	2.9	88.6	-1.04	7.3	3.2	12	AH
Z2BNUL	101.0 *	98.0	93.6	95.4	97.0	1.47	9.7	3.2	96.7	1.55	8.5	2.6	12	AH
ZEDEBK	87.9	87.6	94.6	83.9 *	88.5	-1.21	6.8	4.5	90.5	-0.42	7.9	3.2	12	LC
ZRLXAE	94.7	94.8	98.2	93.4	95.3	0.92	7.8	2.0	95.1	1.05	8.8	2.0	12	LZ
ZVY8TW	85.8 H	89.6	96.8	94.1	91.6	-0.24	10.2	4.9	89.3	-0.80	9.0	5.8	12	LA

Consensus (All Labs) Results

Wk Mean	92.09	92.01	92.29	93.06	Month Mean	92.34	Grand Mean	91.84
Avg SDr	8.10	8.01	8.01	8.30	Avg SD	8.09	Avg SD	8.08
SD btwn Labs	3.65	3.20	3.91	4.45	SD btwn Labs	3.18	SD btwn Labs	3.14
Labs Incld	54	53	54	53	SD btwn Wks	2.81	SD btwn Wks	3.65
Labs Excld	0	1	0	1	Labs Incld	54	Labs Incld	54
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

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

	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
24BDD7	90.3	89.0	92.2	91.9	90.8	0.54	4.1	1.5	90.9	0.75	4.7	1.1	16	LC
27HVAG	90.6	91.8	92.1	90.8	91.3	0.65	5.1	0.7	91.5	0.89	4.7	1.2	16	LD
2JPQK7	79.9	85.8	85.2	90.7	85.4	-0.74	4.7	4.4	87.5	-0.17	4.5	4.1	16	LD
62TNFX	88.5 L	88.3	88.6	88.8 L	88.5	0.00	2.2	0.2 L	89.1	0.26	2.3	0.8 L	12	LZ
8RH6V6	89.0	90.4	91.7	88.1	89.8	0.29	3.2	1.6	89.0	0.23	3.7	1.5	16	LD
9EAJ87	79.3	80.5	78.4 *	70.4 X	77.2	-2.67 *	4.5	4.6	79.7	-2.25 *	4.4	4.0	16	LC
9WPQJ3	70.3 X	70.5 X	71.1 X	77.5 X	72.3	-3.80 X	4.8	3.5	84.6	-0.95	3.7	7.5 H	16	MB
ANC9FU	94.6	97.1	94.9	94.0	95.1	1.54	4.0	1.3	93.3	1.40	4.2	3.6	12	LZ
AT2LFX	80.1 H	91.6	91.5	90.7	88.5	-0.02	6.0	5.6	87.1	-0.26	6.0	6.7	15	MB
BFDYRG	87.7	88.8	87.3	80.1 *	86.0	-0.60	2.8	4.0	87.4	-0.19	3.4	2.8	14	LG
BMTMJX	79.3	83.7	87.3	90.2	85.1	-0.80	4.3	4.7	86.1	-0.56	3.6	4.2	16	TH
C8GJG4	90.4	92.4	89.9	89.0	90.4	0.44	3.6	1.4	89.5	0.37	3.6	1.4	15	EM
CN34Z9	91.8	93.1 H	93.0	89.3	91.8	0.76	6.0	1.8	90.7	0.70	5.3	2.5	13	LC
CZJNJ6	86.3	87.6	90.1	88.0	88.0	-0.13	4.1	1.6	84.8	-0.90	3.8	3.4	16	LC
D28KNP	98.9 *	98.9 *	98.5	99.0 X	98.8	2.41 *	3.9	0.2 L	97.5	2.52 *	4.2	1.8	16	LD
EKE8NN	84.7	88.7	86.8	86.6	86.7	-0.43	4.7	1.6	85.4	-0.74	4.1	2.3	16	LD
EUL7XP	88.9	89.9	99.0	88.9 H	91.7	0.73	6.2	4.9	91.6	0.95	5.7	3.0	16	LC
HHY9JV	76.2 *	85.5	82.1	84.7	82.1	-1.50	4.5	4.2	79.9	-2.21 *	5.0	6.1	15	LZ
HNK4LK	87.7	88.5	87.4	88.5	88.0	-0.12	2.9	0.6 L	88.2	0.01	3.1	0.7 L	16	EM
JTAZLV	89.2	91.3	90.9	89.5	90.2	0.39	2.4	1.0	89.4	0.35	3.2	1.6	16	LD
K6KRPV	84.5	77.0 *	80.0 H	84.5 H	81.5	-1.65	7.2	3.7	86.2	-0.52	6.7	4.6	16	MB
KF3EYW	89.6 L	90.0	90.0	89.1	89.7	0.27	3.3	0.4 L	88.8	0.18	3.6	1.8	16	LC
KNXCLY	90.1	86.3	89.0	87.3	88.2	-0.09	3.8	1.7	87.5	-0.16	3.0	2.1	16	LD
KVV6UT	92.9	92.0	98.4	90.5	93.5	1.15	3.7	3.4	92.3	1.12	3.8	3.0	16	LZ
LBQQXZ	92.0	91.1	91.3	93.4	92.0	0.80	3.6	1.0	91.7	0.97	3.6	1.3	16	LD
LQJFTW	90.9	90.9	93.3	89.4	91.1	0.60	2.9	1.6	90.7	0.69	3.6	1.5	16	LD
LRTQLU	103.3 X	95.4	103.5 *	96.7 *	99.7	2.62 *	4.8	4.3	93.6	1.47	4.6	6.4	16	LC
LYA4NY	89.0	86.9	89.3	91.1	89.1	0.12	4.6	1.7	88.2	0.01	4.1	2.0	16	LC
MBHBVJ	90.9	93.4	91.9	91.7	92.0	0.80	3.8	1.0	92.7	1.24	4.7	1.2	16	EM
MDRB2Q	88.5	88.9	89.3	87.8	88.6	0.02	3.6	0.6	88.8	0.18	3.7	1.3	16	LD
MPG93N	88.4	88.3	88.3	88.3	88.3	-0.05	3.0	0.1 L	88.6	0.14	3.4	0.6 L	16	LD
MTJ93L	88.5	88.3	87.7	86.9	87.9	-0.16	3.0	0.7	89.7	0.43	3.1	1.8	16	TH
MXWYKA	88.0	81.2	81.8	85.9	84.2	-1.02	4.4	3.3	83.9	-1.14	4.0	2.4	8	EM
MZZKFM	95.6 L	93.4 L	92.0	95.6 *L	94.1	1.31	1.7	1.8	92.4	1.16	1.8	1.8	16	TD
NCN7YM	85.1	82.2	80.3	82.3	82.5	-1.42	3.5	2.0	81.5	-1.78	3.5	2.9	16	TU

Report #577 (L)
October 2017

Containerboard Interlaboratory Testing Program
Analysis 215
Ring Crush, 42 lb Linerboard - 42D2
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
NMT3YJ	80.7	82.6	81.8 H	79.5 *	81.1	-1.73	5.7	1.4	79.7	-2.27 *	5.3	3.2	12	LC
PTUUPT	78.9 *	81.6	87.8	83.9	83.1	-1.29	5.2	3.8	85.0	-0.84	5.0	4.6	16	LZ
Q4Q3ZH	92.0	90.7	91.9	91.2	91.4	0.68	3.5	0.6	91.0	0.76	3.8	0.7 L	16	LD
Q88K4K	88.5	91.5	90.1	89.4	89.9	0.31	3.4	1.3	88.9	0.20	4.4	1.8	16	LD
QEMBHK	88.9	88.2	90.6	90.0	89.4	0.21	2.7	1.1	82.8	-1.45	2.9	5.4	16	LZ
QU288U	90.2	94.9	90.2	91.1	91.6	0.71	3.3	2.2	86.6	-0.40	5.3	9.9 H	13	LC
TQR8FK	88.5	91.0	90.3	90.7	90.1	0.37	3.4	1.1	89.7	0.42	3.7	1.1	16	TH
U8TATH	92.6	91.1	93.5	93.8	92.7	0.98	3.7	1.2	92.4	1.14	3.5	0.9 L	16	LD
UC77JD	86.9	88.0	87.7	89.1	87.9	-0.14	3.3	0.9	86.3	-0.49	3.6	3.6	16	LD
VEDUDA	88.7	88.7 L	89.2	89.9	89.1	0.14	4.3	0.6	86.4	-0.46	3.9	2.1	16	EM
W9GM87	90.8	94.7	94.2	88.1	91.9	0.79	3.4	3.1	90.6	0.67	3.7	2.2	16	LD
WJJLH2	92.0	93.3	93.4	93.9	93.1	1.08	4.0	0.8	93.5	1.44	3.8	1.1	16	LD
WPQ8CP	89.3	88.6	88.3	90.0	89.1	0.12	5.3	0.8	90.7	0.70	4.3	2.1	16	LC
WZP3C7	66.2 XH	94.3	98.8	63.9 XH	80.8	-1.81	7.1	18.3 H	88.2	0.01	5.7	13.2 H	16	LC
X2GFBH	102.2 X	105.0 X	102.3 *	101.5 X	102.8	3.33 X	4.2	1.5	99.1	2.95 X	4.4	3.0	16	LX
X2Z38F	80.5	84.1 L	83.5	86.2	83.6	-1.17	2.8	2.3	82.6	-1.48	3.5	1.9	16	EN
XRAQN8	82.4	84.8	84.0	84.7	84.0	-1.07	3.5	1.1	84.3	-1.03	3.6	1.1	8	LC
XUCLAV	85.5	81.6 L	90.4	86.8	86.1	-0.58	3.6	3.6	86.2	-0.52	3.0	3.6	16	TJ
YN9XCN	87.1	83.3	84.0	84.0	84.6	-0.93	3.1	1.7	86.9	-0.33	3.7	2.3	16	LD
YVPFNA	85.2	87.5 H	89.3	86.2	87.1	-0.35	5.7	1.8	89.5	0.37	5.4	3.1	12	XX
ZEDEBK	86.5	86.5	87.3	87.7	87.0	-0.36	4.9	0.6	87.2	-0.26	4.1	1.3	16	LD
ZRLXAE	88.9	87.5	88.7	86.5	87.9	-0.16	4.3	1.1	84.1	-1.08	4.0	3.4	16	LC
ZVY8TW	88.9	89.6	89.1	90.0	89.4	0.20	3.6	0.5 L	90.8	0.72	4.0	3.2	16	EM

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4				
Wk Mean	87.78	88.79	89.81	88.74	Month Mean	88.55	Grand Mean	88.13
Avg SDr	4.27	4.12	4.07	3.94	Avg SD	4.19	Avg SD	4.14
SD btwn Labs	4.52	4.41	5.13	3.45	SD btwn Labs	4.27	SD btwn Labs	3.72
Labs Incld	54	56	57	53	SD btwn Wks	3.40	SD btwn Wks	3.72
Labs Excld	4	2	1	5	Labs Incld	56	Labs Incld	57
Labs not Rcvd	0	0	0	0				

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
24BDD7	80.8	80.0	81.1	82.1	81.0	0.75	3.7	0.9	81.4	1.03	3.6	1.4	12	LC
27HVAG	78.1	78.6	78.7	78.2	78.4	0.13	3.7	0.3 L	78.6	0.32	3.8	1.0	12	LD
2JPQK7	70.4	73.9	68.7 *	81.5	73.6	-1.00	3.8	5.7 H	75.4	-0.47	4.1	3.8	12	LD
62TNFX	77.7	77.8	78.3	77.8	77.9	0.01	3.3	0.3 L	78.2	0.24	2.6	1.0	12	LZ
8RH6V6	78.3	79.3	79.4	79.0	79.0	0.27	3.0	0.5	78.1	0.21	3.2	1.9	12	LD
9EAJ87	66.5 *	65.5 *	61.4 X	63.8 X	64.3	-3.21 X	4.1	2.2	66.6	-2.65 *	3.8	4.9	12	LC
9WPQJ3	57.8 X	63.3 X	55.2 X	66.6 *H	60.7	-4.07 X	4.9	5.2	70.7	-1.64	4.0	8.8 H	12	MB
ANC9FU	84.8	82.0	84.1	No Data	83.7	1.38	4.1	1.5	81.5	1.04	3.7	2.6	11	LZ
AT2LFX	70.8 H	78.2	76.8	78.8	76.2	-0.40	4.9	3.7	75.7	-0.38	5.5	7.3 H	12	MB
BFDYRG	79.0	80.9	80.5	75.2	78.9	0.25	3.1	2.6	79.0	0.42	2.7	1.8	11	LG
BMTMJX	74.4	73.2	75.8	75.1	74.6	-0.77	3.1	1.1	76.3	-0.25	3.1	3.8	12	MB
C8GJG4	78.2	78.1	79.9	79.1	78.8	0.23	3.1	0.9	78.0	0.19	3.2	1.7	7	EM
CN34Z9	82.5	82.0	83.5	81.0	82.3	1.04	4.2	1.0	79.9	0.67	4.2	2.1	12	LC
CZJNJ6	78.2	79.2	77.3	74.9	77.4	-0.11	3.5	1.8	74.2	-0.75	3.7	2.8	12	LC
D28KNP	87.8 *	88.8 *	90.1 *	87.0 *	88.4	2.51 *	3.2	1.4	86.3	2.25 *	3.4	2.2	12	LD
EKE8NN	75.0	78.0	77.9	78.2	77.3	-0.14	3.5	1.5	76.7	-0.13	3.4	1.3	11	LD
EUL7XP	75.9	74.0 H	79.8	74.6 H	76.1	-0.42	6.7	2.6	75.0	-0.57	6.1	4.2	12	LC
HHY9JV	68.6	71.0	68.8 *	67.6 *	69.0	-2.10 *	4.2	1.4	66.7	-2.62 *	4.3	5.2	12	LZ
HNK4LK	78.7	79.5	79.9	80.1	79.5	0.40	2.2	0.6	82.4	1.28	2.5	4.1	12	EX
JTAZLV	78.3	78.3	78.8	79.5	78.7	0.21	2.1	0.6	77.0	-0.06	3.0	1.4	12	LD
K6KRPV	71.9 H	72.4 H	75.8	76.3	74.1	-0.89	6.8	2.3	73.2	-1.02	6.0	2.1	12	MB
KF3EYW	80.2	79.1	79.0	79.4	79.4	0.37	3.9	0.5	76.2	-0.26	4.0	3.3	12	LC
KNXCLY	79.4	78.6	77.4	76.0	77.9	0.00	2.7	1.5	77.6	0.09	2.5	2.5	12	LD
KVV6UT	83.9	85.4	83.1	82.6	83.8	1.40	3.3	1.2	82.4	1.27	3.1	1.4	12	LZ
LBQQXZ	79.4	79.6	80.2	83.2	80.6	0.65	3.2	1.7	79.9	0.65	3.1	1.4	12	LD
LQJFTW	79.8	80.6	81.3	79.6	80.3	0.59	3.8	0.8	80.5	0.82	3.6	1.9	12	LD
LRTQLU	89.2 *	80.3	87.0	82.8	84.8	1.65	3.3	4.0	83.6	1.58	4.4	6.8	12	LC
LYA4NY	77.9	73.6	78.3	78.5	77.1	-0.19	4.7	2.3	77.9	0.16	5.2	2.1	12	LC
MBHBVJ	80.8	83.5 L	82.2	81.9	82.1	1.01	3.2	1.1	82.0	1.17	3.2	1.1	12	EM
MDRB2Q	78.0	77.7	78.0	78.7	78.1	0.06	3.3	0.4 L	77.0	-0.05	3.9	2.0	12	LD
MPG93N	78.1	78.2	78.2	78.4	78.2	0.09	3.3	0.1 L	77.7	0.12	3.7	0.7 L	12	LD
MTJ93L	79.6	79.0	77.6	79.0	78.8	0.22	2.4	0.8	78.8	0.38	2.5	2.2	12	TH
MXWYKA	71.9	71.2 L	73.7	71.0	71.9	-1.41	2.9	1.2	71.9	-1.32	2.9	1.2	4	EM
MZZKFM	72.4 L	77.9 L	74.6	73.0 L	74.4	-0.81	1.5	2.5	76.8	-0.12	1.9	2.6	12	TD
NCN7YM	65.8 *	70.4	72.5	73.2	70.5	-1.75	2.3	3.4	70.1	-1.78	2.7	3.0	12	TU

CTS

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 35 lb Linerboard - 35E1

TAPPI Official Test Method T822

Report #577 (L)
October 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
NMT3YJ	69.8	67.9 *	68.9 *	65.0 XL	67.9	-2.37 *	4.2	2.1	66.8	-2.60 *	4.3	2.2	8	LC
PTUUPT	67.3	74.5	75.5	73.0	72.6	-1.25	5.7	3.7	73.8	-0.86	4.3	2.8	12	LZ
Q4Q3ZH	80.1	80.7	81.5	80.4	80.7	0.67	4.2	0.6	80.7	0.85	3.8	0.7 L	12	LD
Q88K4K	83.9	82.8	82.1	80.4	82.3	1.06	3.5	1.5	78.7	0.37	3.3	3.1	12	LD
QEMBHK	81.3	80.8	81.3	80.9	81.1	0.77	3.2	0.3 L	80.0	0.69	2.7	4.4	12	LZ
QU288U	80.1 L	82.4	85.1	81.1	82.2	1.03	3.3	2.2	78.0	0.19	4.5	8.8 H	12	LC
TQR8FK	74.9	80.8	78.9	80.5	78.8	0.22	3.5	2.7	78.2	0.24	3.2	1.8	12	TH
U8TATH	80.7 L	80.8	81.7	80.3	80.9	0.71	2.5	0.6	81.1	0.94	2.5	1.3	12	LD
UC77JD	78.1	76.8	76.3	76.0	76.8	-0.25	2.9	0.9	78.1	0.22	2.8	4.5	12	LD
VEDUDA	78.6	77.6 L	81.4	81.9	79.9	0.47	2.7	2.1	78.1	0.20	3.2	2.2	12	EM
W9GM87	81.1	78.3	82.4	75.2	79.2	0.33	3.7	3.2	78.1	0.20	3.0	2.7	11	LD
WJJLH2	77.1	80.6	79.7	79.6	79.2	0.33	4.7	1.5	79.5	0.57	3.8	2.0	12	LD
WPQ8CP	77.2	77.7	76.4	79.9	77.8	-0.01	5.0	1.5	79.4	0.52	4.2	2.3	12	LC
WZP3C7	62.6 *H	85.1	87.6 *	61.5 XH	74.2	-0.87	6.4	14.1 H	80.2	0.74	5.0	10.8 H	12	LC
X2GFBH	86.3 H	88.0 *	85.9	87.5 *	86.9	2.15 *	6.0	1.0	83.9	1.66	5.8	3.4	12	LX
X2Z38F	74.9 L	75.1	74.4	77.2	75.4	-0.58	2.5	1.2	75.3	-0.49	2.5	0.9 L	12	EN
XRAQN8	76.0	74.9	76.7	78.4	76.5	-0.32	3.0	1.5	76.5	-0.18	3.0	1.5	4	LC
XUCLAV	74.4	68.1 *	79.4	75.4	74.3	-0.84	2.7	4.7	73.9	-0.83	2.4	3.3	12	TJ
YN9XCN	76.0	76.2	76.0	75.0	75.8	-0.49	3.5	0.5	75.5	-0.45	3.1	1.4	12	LD
YVPFNA	67.0 H	67.7 *H	67.6 *H	69.2 *H	67.9	-2.37 *	7.3	0.9	76.1	-0.29	5.1	6.4	12	XX
ZEDEBK	79.2	75.7	76.3	73.5	76.2	-0.40	4.8	2.3	75.5	-0.42	4.1	1.8	12	LD
ZRLXAE	74.2	72.6	74.0	72.6	73.3	-1.07	4.5	0.8	72.6	-1.15	3.7	1.8	12	LC
ZVY8TW	77.3	76.8	77.3	77.7	77.3	-0.14	2.4	0.4 L	77.4	0.04	3.1	1.3	12	EM

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4		Monthly		Cumulative
Wk Mean	77.02	77.68	78.65	77.88	Month Mean	77.85	Grand Mean	77.26
Avg SDr	4.26	3.85	3.69	3.80	Avg SD	3.91	Avg SD	3.74
SD btwn Labs	5.44	4.79	4.55	4.20	SD btwn Labs	4.21	SD btwn Labs	4.03
Labs Incld	57	57	56	54	SD btwn Wks	2.73	SD btwn Wks	3.61
Labs Excld	1	1	2	3	Labs Incld	56	Labs Incld	58
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

	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
24BDD7	22.7	22.8	22.6	22.1	22.6	-0.03	1.7	0.3	22.5	-0.04	1.8	0.4 L	16	LU
27HVAG	22.4	23.6 H	22.9	21.6	22.6	0.03	2.0	0.9	22.7	0.14	2.1	0.5 L	16	LY
2TF6TH	21.9	22.4	21.9	22.3	22.1	-0.43	2.0	0.3	21.8	-0.82	2.0	0.9	15	LW
3CZLB3	23.4	24.0	24.5	24.2	24.0	1.36	1.8	0.5	23.0	0.49	2.0	1.0	15	LA
3P98Y2	23.6	24.3	23.9	24.0	23.9	1.27	2.0	0.3	24.0	1.45	2.1	0.6	16	XX
9EAJ87	24.6 *H	23.4 H	23.1	22.7	23.4	0.81	2.7	0.8	23.7	1.19	2.1	1.0	16	XX
AT2LFX	22.8	22.4	22.4	22.7	22.6	0.01	1.7	0.2 L	22.7	0.19	1.5	1.2	15	LA
AXG9X9	23.0	22.4	23.3	23.0	22.9	0.31	2.1	0.3	22.9	0.39	2.1	0.3 L	16	LW
BFDYRG	21.7	22.0	20.9	20.5	21.3	-1.21	2.0	0.7	21.7	-0.91	1.9	0.5 L	14	LU
CN34Z9	28.5 XL	26.4 XL	26.5 XL	27.3 XL	27.2	4.32 X	0.0	1.0	27.4	5.01 X	0.0	1.7	12	LA
CZJNJ6	21.5	22.0	21.8	21.9	21.8	-0.74	1.6	0.2 L	21.1	-1.48	1.5	0.6	16	LA
EKE8NN	21.7	22.5	22.7	23.0	22.5	-0.11	2.0	0.6	22.4	-0.13	2.0	0.6	15	LY
EUL7XP	23.2	23.0	23.2	23.6	23.3	0.65	2.0	0.3	23.3	0.78	2.1	0.5 L	16	LU
FW3VWT	22.9	24.1	23.1	22.6	23.2	0.53	1.8	0.7	22.5	-0.04	1.9	1.2	16	LA
HHY9JV	22.3	21.8	22.4	21.7	22.0	-0.52	1.9	0.3	21.7	-0.88	1.8	0.4 L	15	LZ
HKKTQK	24.5 *	23.9	24.0	22.0	23.6	0.95	2.3	1.1	23.6	1.06	2.2	0.9	12	LZ
JTAZLV	21.5	21.8	21.8	21.8	21.7	-0.85	1.5	0.2 L	21.9	-0.71	1.6	0.3 L	16	BK
K6KRPV	20.4 *L	20.4 L	22.0 L	21.4 L	21.1	-1.43	0.5	0.8	23.5	0.95	0.5	2.3	16	BK
KF3EYW	22.5 L	22.8	23.1	22.6	22.8	0.16	1.6	0.3	22.9	0.34	1.7	0.3 L	16	LU
KNXCLY	22.3	22.2	21.8	23.1	22.3	-0.25	1.8	0.6	22.3	-0.26	1.9	0.7	16	LA
KVV6UT	21.0	22.2	22.4	21.6	21.8	-0.77	2.1	0.6	21.4	-1.23	2.1	0.5	16	LW
KW8NWB	24.3	25.7 *	25.8 X	25.3 *H	25.3	2.54 *	2.5	0.7	24.4	1.86	1.8	1.2	16	LH
LBQQXZ	22.9	22.9	22.8	22.8	22.8	0.23	2.1	0.1 L	22.5	-0.10	2.0	0.4 L	16	LY
LFWKRV	24.4	24.7	25.2 *	24.7 *	24.7	2.02 *	2.3	0.3	24.5	1.99 *	2.1	0.6	16	LA
LQJFTW	23.7	22.6	23.8	22.6	23.2	0.54	1.5	0.7	23.0	0.46	1.6	0.8	16	LA
LRTQLU	22.2 L	22.6 L	23.4 L	22.8 L	22.8	0.16	0.0	0.5	21.2	-1.44	0.0	1.3	16	LW
LYA4NY	23.5	22.6	23.0	23.7	23.2	0.59	2.0	0.5	23.7	1.13	2.0	0.6	16	LW
LYTURR	22.8 L	23.0 L	22.8 L	22.7 L	22.8	0.24	0.9	0.1 L	22.6	0.03	1.0	0.2 L	16	TT
M6UG3R	22.4	21.5	23.0	23.1	22.5	-0.07	2.1	0.7	22.9	0.31	2.2	0.8	16	LH
MDRB2Q	23.0	23.0	23.2	23.8	23.3	0.63	1.4	0.4	22.4	-0.20	1.3	0.8	16	LA
PTUUPT	22.1	21.8 L	20.8	21.0	21.4	-1.09	1.9	0.6	21.3	-1.32	1.8	1.1	16	LA
Q4Q3ZH	22.7	22.6	23.0	22.7	22.7	0.14	1.8	0.2 L	23.1	0.59	1.6	0.6	16	LA
Q88K4K	22.9 L	22.8 L	22.8 L	23.0 L	22.9	0.27	0.0	0.1 L	23.0	0.47	0.9	0.3 L	16	LU
QBPPT4	22.8 H	22.0	22.2	22.8 H	22.5	-0.11	2.3	0.4	22.4	-0.14	2.1	0.7	16	XX
QU288U	19.0 XL	19.9 *L	20.3 *L	19.7 *L	19.7	-2.68 *	0.7	0.5	20.8	-1.77	0.5	0.9	14	LA

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D2

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
R86Y6K	22.2	23.2	22.7	22.3	22.6	-0.01	2.1	0.5	21.8	-0.81	2.1	0.8	12	XX
TQR8FK	22.8 L	22.1 L	22.0	22.3 L	22.3	-0.26	1.0	0.3	22.3	-0.22	0.9	0.4 L	16	TT
U4EPUA	23.7	23.1	23.5	23.1	23.3	0.71	2.2	0.3	23.3	0.75	2.1	0.8	16	LU
U8TATH	21.6	20.9	20.6	20.8	21.0	-1.52	1.7	0.4	21.3	-1.33	1.6	0.6	16	LY
UC77JD	20.1 *	20.3 *	21.3	21.1	20.7	-1.79	1.8	0.6	20.4	-2.25 *	1.8	0.6	16	LW
UWHVWB	22.2	22.5	22.1	21.5	22.1	-0.49	1.6	0.4	22.7	0.15	1.6	0.7	16	LU
W86NDW	21.7	20.4	21.0	20.6	20.9	-1.59	1.8	0.6	24.2	1.67	2.3	12.5 H	16	XX
W9GM87	22.8	24.0	23.6	21.6	23.0	0.37	2.1	1.0	22.5	-0.08	2.0	0.9	16	LZ
WJJLH2	23.0	23.4	23.2	23.4	23.3	0.63	1.4	0.2 L	23.3	0.78	1.4	0.2 L	16	LH
WPQ8CP	23.2	22.7	23.3 L	22.5	22.9	0.31	1.6	0.4	22.8	0.25	1.8	0.7	16	LA
WXNYKJ	19.3 XL	37.7 XL	21.2 L	20.9 L	24.8	2.05 *	0.0	8.7 H	20.8	-1.77	0.0	4.6 H	16	LW
X2Z38F	20.4 *	20.1 *	21.0	21.3	20.7	-1.78	1.7	0.6	20.8	-1.76	1.8	0.4 L	16	LY
XFXEH6	22.7	22.6 H	23.3 H	23.4	23.0	0.39	2.3	0.4	23.3	0.78	2.3	0.9	16	LA
YN9XCN	21.8	21.3	22.6	22.1	21.9	-0.60	2.0	0.5	22.0	-0.54	2.0	0.5 L	16	LU
YVPFNA	21.2 L	21.7 L	20.4 *L	21.4 L	21.2	-1.33	0.0	0.6	22.3	-0.24	0.7	1.2	12	XX
Z2BNUL	22.8	23.5 H	22.5 H	23.0	23.0	0.35	2.8	0.4	24.2	1.72	2.4	1.1	15	LU
ZEDEBK	22.7	22.9	22.8	22.8	22.8	0.22	1.6	0.1 L	22.5	-0.08	1.8	0.7	16	LA
ZRLXAE	23.0	23.9	22.8	23.0	23.2	0.57	2.0	0.5	22.6	0.05	2.1	0.7	16	LW
ZVY8TW	23.4	22.9	24.4	22.4	23.3	0.65	2.2	0.9	23.1	0.59	2.3	0.6	16	LZ

Consensus (All Labs) Results

Wk Mean	22.56	22.56	22.58	22.42	Month Mean	22.58	Grand Mean	22.56
Avg SDr	1.83	1.87	1.79	1.85	Avg SD	1.83	Avg SD	1.80
SD btwn Labs	1.00	1.17	1.06	1.08	SD btwn Labs	1.06	SD btwn Labs	0.97
Labs Incld	51	52	52	53	SD btwn Wks	1.30	SD btwn Wks	1.99
Labs Excld	3	2	2	1	Labs Incld	53	Labs Incld	53
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
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
24BDD7	22.1	22.1	22.3	22.0	22.1	0.12	1.6	0.1	21.9	0.11	1.5	0.5	12	LU
27HVAG	22.9	23.2 H	22.4	22.4	22.7	0.72	1.6	0.4	22.3	0.60	1.8	0.7	12	LU
2TF6TH	21.5	21.6	21.6	21.4	21.5	-0.47	1.5	0.1 L	21.3	-0.47	1.6	0.6	12	LW
3CZLB3	23.1	23.6	23.7	22.8	23.3	1.24	1.4	0.4	22.2	0.44	1.7	1.3	12	LA
3P98Y2	23.2	22.5	24.2	23.1	23.3	1.22	1.6	0.7	23.3	1.67	1.8	0.5	12	XX
9EAJ87	23.4 H	22.7	20.3 H	22.2 H	22.2	0.18	2.4	1.3	22.4	0.65	1.9	1.2	12	XX
AT2LFX	21.6	21.4	21.4	21.5	21.5	-0.47	1.7	0.1 L	21.2	-0.67	1.4	0.6	12	LA
AXG9X9	22.3	21.7	22.4	22.7	22.3	0.27	1.7	0.4	22.2	0.42	1.8	0.3	12	LW
BFDYRG	20.9	21.1	21.6	21.0	21.1	-0.81	1.5	0.3	21.3	-0.53	1.6	0.3	11	LW
CN34Z9	24.2 L	26.4 XL	24.9 *L	25.2 XL	25.2	3.07 X	0.0	0.9	24.8	3.33 X	0.0	2.0 H	12	LA
CZJNJ6	20.6	20.5	21.2	20.1	20.6	-1.33	1.5	0.5	20.3	-1.62	1.6	0.5	12	LA
EKE8NN	21.4	21.6	21.3	22.3	21.7	-0.30	1.7	0.4	21.6	-0.22	1.5	0.4	12	LY
EUL7XP	23.9	22.5	24.1	24.0 *	23.6	1.58	1.6	0.8	23.4	1.74	1.8	0.6	12	LU
FW3VWT	22.2	22.2	22.5	21.5	22.1	0.13	1.7	0.4	21.4	-0.39	1.7	1.2	12	LA
HHY9JV	20.4	20.6	21.7	21.6	21.1	-0.88	1.5	0.7	20.8	-1.03	1.8	0.5	12	LZ
HKKTQK	25.2 *	23.5	24.1	21.6	23.6	1.54	1.8	1.5 H	23.5	1.92	1.8	1.0	8	LZ
JTAZLV	20.7	21.0	21.3	21.9	21.2	-0.74	1.6	0.5	21.1	-0.77	1.3	0.5	12	BK
K6KRPV	20.3 L	18.5 XL	20.3 L	19.8 *L	19.7	-2.19 *	0.2	0.9	21.0	-0.87	0.3	2.0 H	12	BK
KF3EYW	21.9	21.9	22.0	21.8	21.9	-0.08	1.4	0.1 L	21.6	-0.24	1.4	0.4	12	LU
KNXCLY	21.9 H	22.4	22.4	22.2	22.2	0.24	1.7	0.2	22.0	0.27	1.6	0.5	12	LW
KVV6UT	21.2	22.1	22.2	21.4 H	21.7	-0.23	1.8	0.5	21.0	-0.85	1.7	0.7	12	LW
KW8NWB	24.2	23.7	24.8 *	23.9 *	24.1	2.08 *	1.7	0.5	27.9	6.69 X	1.9	5.6 H	12	LH
LBQQXZ	21.4	21.5	21.5	21.9	21.6	-0.40	1.6	0.2	21.7	-0.11	1.6	0.5	12	LY
LFWKRV	23.8	23.6	24.4 H	25.8 X	24.4	2.31 *	1.9	1.0	23.9	2.31 *	1.7	1.1	12	LA
LQJFTW	23.0	21.6 H	21.1 H	21.0	21.7	-0.30	2.1	0.9	22.1	0.33	1.8	0.7	12	LA
LRTQLU	21.8 L	19.8 L	21.9 L	21.9 L	21.4	-0.61	0.0	1.0	20.6	-1.29	0.9	0.9	12	LW
LYA4NY	22.8	21.9	23.4	23.0	22.8	0.74	1.8	0.6	22.4	0.65	1.8	0.5	12	LW
LYTURR	22.3 L	22.1 L	21.9	22.0 L	22.0	0.05	0.8	0.2	21.8	0.02	0.9	0.3	12	TT
M6UG3R	22.9	22.9	22.8 H	22.4	22.8	0.74	2.1	0.2	22.5	0.75	1.8	0.6	12	XX
MDRB2Q	21.2 L	22.6	22.4 L	22.0 L	22.1	0.07	0.8	0.6	22.0	0.21	1.0	0.7	12	LA
PTUUPT	21.3	20.3	21.3	20.5	20.8	-1.11	1.4	0.5	20.4	-1.49	1.4	0.6	12	LA
Q4Q3ZH	21.2	21.1	21.6	21.7	21.4	-0.56	1.4	0.3	21.3	-0.47	1.4	0.3	12	LA
Q88K4K	21.8 L	22.3 L	23.3 L	22.9 L	22.6	0.57	0.0	0.7	22.8	1.10	1.0	1.4	12	LU
QBPPT4	22.0	22.9	21.4	22.8	22.2	0.26	1.5	0.7	21.5	-0.32	1.9	1.0	12	XX
QU288U	18.9 *L	19.5 *L	19.2 *L	20.5 L	19.5	-2.38 *	0.8	0.7	20.4	-1.48	0.5	1.0	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
R86Y6K	22.0 H	21.9	22.5	21.4	22.0	-0.03	1.7	0.4	21.9	0.16	1.7	0.8	8	LY
TQR8FK	21.6 L	21.8 L	21.8	21.9	21.8	-0.20	0.9	0.1 L	21.6	-0.19	0.9	0.3	12	TT
U4EPUA	22.2	22.5	22.5	22.7	22.5	0.48	1.6	0.2	23.0	1.30	1.7	0.7	12	LU
U8TATH	20.9	19.7 *	21.1	20.5	20.6	-1.38	1.6	0.6	20.8	-1.13	1.5	0.5	12	LY
UC77JD	20.0	20.2	20.1	20.1	20.1	-1.81	1.6	0.1 L	20.0	-1.97 *	1.6	0.3	12	LW
UWHVWB	22.7	22.5 L	21.7	20.1	21.7	-0.25	1.4	1.2	22.6	0.94	1.4	1.3	8	LU
W86NDW	21.3	20.1	20.3	20.8	20.6	-1.32	1.7	0.5	20.1	-1.83	1.6	0.7	12	XX
W9GM87	21.9	22.7	23.9	20.9 H	22.3	0.34	1.9	1.3	21.7	-0.07	1.6	0.9	11	LZ
WJJLH2	22.7	22.6	23.0	22.7	22.7	0.70	1.5	0.2	22.7	0.97	1.4	0.2 L	12	LH
WPQ8CP	22.2	22.5	21.9	21.0	21.9	-0.12	1.6	0.7	21.8	0.07	1.8	1.0	12	LA
WXNYKJ	21.5 L	26.7 XL	22.8 L	21.7 L	23.2	1.13	0.0	2.4 H	21.7	-0.10	1.1	2.1 H	12	LW
X2Z38F	20.9	20.9	20.9	21.6	21.1	-0.85	1.7	0.3	20.8	-1.04	1.6	0.3	12	LY
XFXEH6	22.7	22.4	23.4	23.2	22.9	0.88	1.7	0.5	22.5	0.84	1.8	0.7	12	LA
YN9XCN	21.4	21.0	21.8	21.0	21.3	-0.68	1.7	0.4	21.2	-0.64	1.7	0.4	12	LU
YVPFNA	21.5 L	20.3 L	21.1 L	20.8 L	20.9	-1.02	0.0	0.5	21.5	-0.34	1.3	0.8	12	XX
Z2BNUL	24.3 H	22.6	23.1	22.7	23.2	1.14	2.1	0.8	23.5	1.93 *	2.4	1.1	12	LU
ZEDEBK	22.5	21.1	22.4 L	21.5	21.9	-0.10	1.3	0.7	22.0	0.21	1.3	0.7	12	LA
ZRLXAE	23.4	22.2	23.2	22.7	22.9	0.87	1.6	0.5	21.5	-0.34	1.8	1.2	12	LW
ZVY8TW	24.0	22.1	22.9	23.1	23.0	1.00	1.6	0.8	22.6	0.89	1.5	0.8	12	LZ

Consensus (All Labs) Results

Wk Mean	22.09	21.82	22.20	21.80	Month Mean	21.98	Grand Mean	21.78
Avg SDr	1.50	1.57	1.60	1.54	Avg SD	1.55	Avg SD	1.56
SD btwn Labs	1.21	1.06	1.23	0.98	SD btwn Labs	1.04	SD btwn Labs	0.91
Labs Incld	54	51	54	52	SD btwn Wks	0.71	SD btwn Wks	0.84
Labs Excld	0	3	0	2	Labs Incld	53	Labs Incld	52
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
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
3CZLB3	165.2	-0.51	18.40		185.3	0.32	26.27	4	LA
AT2LFX	185.7	0.50	14.45		167.3	-0.75	22.76	4	LA
CN34Z9	175.3	-0.01	27.49		183.1	0.19	22.04	4	LA
D28KNP	146.4	-1.44	11.90		150.3	-1.76	3.08	4	EV
DRZ3PR	166.2	-0.46	15.99		160.7	-1.14	6.78	4	EV
EKE8NN	181.8	0.31	11.62		189.0	0.54	22.74	4	EV
EUL7XP	145.7	-1.47	6.22	L	144.6	-2.09 *	2.32 L	4	EV
FW3VWT	194.1	0.91	25.36		185.7	0.35	9.54	4	LA
HHY9JV	156.3	-0.95	16.43		156.3	-1.40	0.00	1	EV
HKKTQK	184.4	0.44	17.78		177.4	-0.15	6.29	3	XX
K6KRPV	211.7	1.78	18.13		204.6	1.47	7.63	4	EV
KNXCLY	202.9	1.35	25.04		201.5	1.28	6.88	4	LA
KVV6UT	174.9	-0.03	22.62		180.2	0.02	9.73	4	EV
LRTQLU	180.7	0.25	14.27		188.4	0.51	6.87	4	EV
PTUUPT	126.3	-2.43 *	20.26		125.0	-3.26 X	1.51 L	4	LA
Q4Q3ZH	164.7	-0.54	14.20		166.8	-0.78	3.80	4	XX
QU288U	205.0	1.45	24.54		212.8	1.95 *	10.94	2	LA
U4EPUA	177.4	0.09	16.59		177.2	-0.16	6.19	4	EV
W9GM87	166.8	-0.43	24.25		178.8	-0.06	20.54	4	LA
WPQ8CP	170.3	-0.26	15.99		188.4	0.50	25.20	4	LA
X2Z38F	178.4	0.14	13.74		179.3	-0.04	3.29	4	EV
YN9XCN	181.1	0.27	18.17		183.3	0.20	6.91	4	EV
YVPFNA	205.2	1.46	12.82		199.1	1.14	13.86	3	EV
ZRLXAE	167.2	-0.41	11.13		177.3	-0.15	7.84	4	XX

Consensus (All Labs) Results

Month Mean	175.57	Grand Mean	179.86
Avg SD	18.16	Avg SD Months	13.80
SD btwn Labs	20.28	SD btwn Labs	16.84
Labs Incld	24	Labs Incld	23

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		

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
24BDD7	367.5	-0.29	8.13		368.9	-0.08	2.10	4	XX
ANC9FU	354.2	-1.26	7.32		352.1	-1.18	4.47	3	TS
HFCGPE	378.5	0.50	9.23		377.8	0.50	1.18 L	4	PP
LQJFTW	388.1	1.20	3.14 L		396.9	1.76	30.03 H	4	XX
MDRB2Q	364.5	-0.51	6.35		365.7	-0.29	0.91 L	4	LA
U323AA	386.2	1.06	9.76		385.6	1.02	17.74	4	XX
XFXEH6	369.1	-0.18	9.43		368.5	-0.11	3.51	4	XX
XRCBKM	358.6	-0.94	8.48		356.4	-0.90	6.39	4	LA
ZEDEBK	356.8	-1.07	9.74		356.1	-0.92	2.83	4	LA
ZVY8TW	392.2	1.49	7.28		388.5	1.21	5.17	2	XX

Consensus (All Labs) Results

Month Mean	371.57	Grand Mean	370.11
Avg SD	8.12	Avg SD Months	10.63
SD btwn Labs	13.83	SD btwn Labs	15.19
Labs Incld	10	Labs Incld	9

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
24BDD7	114.2	0.48	5.36		113.3	0.60	2.48	4	HY
3DFRN8	100.0	-0.28	11.29		99.2	-0.41	1.90	4	TM
9EAJ87	76.6	-1.54	7.24		78.5	-1.88 *	2.40	4	SC
CZJNJ6	97.6	-0.41	2.70		99.1	-0.41	3.04	4	TM
D28KNP	119.6	0.77	6.15		117.8	0.92	3.61	4	HY
EKE8NN	88.0	-0.93	4.11		89.3	-1.11	3.10	4	XX
EUL7XP	93.4	-0.64	3.65		94.1	-0.77	2.91	4	TM
FPNURR	105.4	0.01	2.88		104.9	0.00	8.44	4	TM
HKKTQK	103.4	-0.10	4.28		104.4	-0.03	2.27	3	TM
KNXCLY	126.6	1.15	4.77		128.5	1.68	1.36	4	HY
LQJFTW	54.5	-2.73 X	0.92	L	58.7	-3.29 X	6.60	4	LZ
LRTQLU	143.0	2.03 *	23.61	H	153.5	3.46 X	7.05	4	SC
MDRB2Q	99.7	-0.30	3.98		103.3	-0.11	7.76	4	SC
PTUUPT	110.2	0.26	3.35		109.2	0.31	3.70	4	TM
Q88K4K	121.3	0.86	5.34		129.0	1.72	6.81	3	HZ
QU288U	120.8	0.84	4.15		153.9	3.49 X	46.81	2	HY
U4EPUA	63.6	-2.24 *	6.73		64.8	-2.86 X	2.08	4	TM
UC77JD	114.8	0.51	2.77		114.9	0.71	2.18	4	TM
XFXEH6	113.0	0.42	3.39		106.4	0.11	7.21	4	SC
YN9XCN	89.2	-0.87	3.96		86.4	-1.32	4.12	4	TM

Consensus (All Labs) Results

Month Mean	105.28	Grand Mean	104.89
Avg SD	7.41	Avg SD Months	4.53
SD btwn Labs	18.58	SD btwn Labs	14.05
Labs Incld	19	Labs Incld	16

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	103.87	19.30	1.41	16
Modified Scott Bond Mechanics	120.40	8.77	15.12	2

Analysis Notes

LQJFTW - 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
3P98Y2	24.4	-0.89	0.55	L	23.9	-1.13	3.36	4
DFPBMR	21.3	-2.00 *	1.48		22.8	-1.64	3.21	4
EKE8NN	28.0	0.40	1.87		24.6	-0.83	3.13	4
EUL7XP	31.0	1.47	1.58		27.5	0.44	3.03	4
FW3VWT	29.6	0.97	2.61		29.2	1.21	2.28	3
HHY9JV	29.8	1.04	2.59		29.8	1.49	0.00	1
HKKTQK	24.6	-0.82	2.41		25.4	-0.47	0.72	3
KNXCLY	25.4	-0.53	1.82		26.2	-0.14	1.95	4
KVV6UT	24.8	-0.75	2.28		23.8	-1.21	1.37	4
LQJFTW	26.2	-0.25	0.84		26.4	-0.02	0.82	4
LRTQLU	24.6	-0.82	3.05		28.2	0.78	2.78	4
LYA4NY	29.6	0.97	4.67		28.1	0.73	1.62	4
PTUUPT	26.4	-0.17	3.21		29.0	1.14	2.22	4
Q4Q3ZH	24.2	-0.96	0.84		25.5	-0.45	1.16	4
QBPPT4	30.8	1.40	3.11		27.6	0.49	2.38	4
QU288U	29.4	0.90	3.29		28.1	0.73	1.84	2
U4EPUA	29.4	0.90	2.41		28.4	0.85	1.84	4
UC77JD	20.0	-2.48 *	1.94		20.6	-2.60 *	1.69	4
W86NDW	26.0	-0.32	3.32		28.0	0.69	2.33	4
WZP3C7	28.0	0.40	1.58		27.5	0.47	0.62	4
X2Z38F	27.8	0.34	2.45		28.1	0.75	0.52	4
XFXEH6	27.4	0.18	1.67		24.7	-0.78	2.49	4
YN9XCN	27.6	0.26	2.07		27.8	0.60	2.38	4
ZRLXAE	27.0	0.04	4.30		25.1	-0.61	1.29	4
ZVY8TW	28.8	0.69	1.79		25.4	-0.49	3.30	4

Consensus (All Labs) Results

Month Mean	26.88	Grand Mean	26.46
Avg SD	2.51	Avg SD Months	2.19
SD btwn Labs	2.79	SD btwn Labs	2.24
Labs Incld	25	Labs Incld	25

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
24BDD7	18.4	0.34	3.45	H	18.3	0.29	0.29	4	TP
2JPQK7	19.0	0.77	2.40		18.6	0.53	0.79	4	GG
3JKLQF	18.2	0.16	1.59		17.4	-0.41	1.17	4	TL
3P98Y2	14.9	-2.29 *	1.92		15.7	-1.91 *	0.72	4	LA
62TNFX	18.3	0.24	1.25		18.2	0.21	0.71	3	XX
CN34Z9	19.8	1.40	1.82		18.9	0.81	1.33	4	TL
DF8LY6	16.5	-1.16	1.21		15.7	-1.86	0.92	3	LA
DFPBMR	17.9	-0.08	1.95		19.4	1.26	1.34	4	GA
EKE8NN	18.3	0.20	1.53		18.8	0.71	1.05	4	LP
EUL7XP	19.6	1.20	2.78		18.4	0.37	1.15	4	LA
HHY9JV	16.7	-0.99	0.49	L	16.7	-1.07	0.00	1	LP
HKKTQK	17.2	-0.59	2.04		17.4	-0.42	0.21	3	TD
K6KRPV	20.9	2.24 *	1.92		29.6	9.95 X	16.87 H	4	XX
KNXCLY	19.7	1.30	1.77		20.2	1.92 *	0.36	4	LP
KVV6UT	17.0	-0.78	1.48		16.4	-1.34	0.51	4	XX
LQJFTW	20.0	1.52	1.35		20.2	1.96 *	0.21	4	LA
LRTQLU	17.0	-0.74	2.62		18.2	0.24	0.91	4	HG
LYA4NY	18.8	0.65	1.52		18.0	0.09	0.62	4	LP
MDRB2Q	17.0	-0.73	1.36		18.4	0.37	1.08	4	LA
NHH6DH	18.1	0.05	1.82		18.7	0.65	0.53	4	XX
PTUUPT	18.4	0.29	1.97		18.5	0.48	0.12 L	4	LP
QU288U	17.8	-0.16	2.63		12.7	-4.45 X	7.15	2	LA
RL7N6Q	17.0	-0.72	1.82		17.6	-0.26	0.72	4	LP
U4EPUA	15.6	-1.81	1.05		15.9	-1.70	0.55	4	LA
U8TATH	17.7	-0.21	0.82	L	17.9	-0.04	0.24	4	LP
UC77JD	18.1	0.12	2.01		18.1	0.13	0.34	4	TP
WPQ8CP	18.0	-0.01	1.56		18.2	0.21	0.63	4	LA
YVPFNA	17.0	-0.71	1.56		16.9	-0.89	0.27	3	LW
ZVY8TW	18.6	0.50	2.18		17.5	-0.34	1.57	2	GA

Consensus (All Labs) Results

Month Mean	17.98	Grand Mean	17.92
Avg SD	1.89	Avg SD Months	0.81
SD btwn Labs	1.33	SD btwn Labs	1.17
Labs Incld	29	Labs Incld	27

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	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
24BDD7	61.0	60.8	61.8 H	60.3	61.0	0.27	4.7	0.6	60.7	-0.08	3.9	1.5	16	LC
27HVAG	56.6	58.4	59.9	57.9	58.2	-1.19	3.3	1.4	60.1	-0.39	3.2	1.6	12	LD
9EAJ87	60.9	61.0	58.4	56.8 *	59.3	-0.63	3.8	2.1	58.3	-1.27	3.3	2.3	16	LC
9WPQJ3	74.6 X	83.4 X	75.8 X	75.3 XH	77.3	8.83 X	5.3	4.1 H	64.5	1.83	3.5	7.9 H	16	MB
A9XV8A	59.4	60.9	60.9	60.5	60.4	-0.02	2.7	0.7	59.3	-0.78	2.9	1.3	16	EM
AT2LFX	54.1 *	57.1	57.1	55.7 *	56.0	-2.35 *	3.6	1.4	56.9	-2.01 *	3.5	2.4	15	MB
AXG9X9	59.8	59.3	62.2	59.2	60.1	-0.18	2.8	1.4	59.5	-0.67	2.9	1.6	16	LC
BFDYRG	64.1	60.7	58.9	56.7 *	60.1	-0.19	3.0	3.1 H	62.8	0.99	2.8	2.5	14	LZ
BMTMJX	61.0	60.5	60.8	60.3	60.6	0.09	2.0	0.3	61.0	0.10	2.2	2.0	16	MB
BXWPT2	60.0	60.8	60.5	61.0	60.6	0.06	3.0	0.4	60.4	-0.21	2.8	0.5 L	16	LD
CZJNJ6	57.2	58.0 L	58.3	58.6	58.0	-1.28	2.1	0.6	60.3	-0.29	3.1	1.7	16	LC
DF8LY6	69.0 X	65.5 *	63.8	67.7 X	66.5	3.17 X	3.8	2.3	64.6	1.88	3.8	2.5	12	LC
EKE8NN	56.9	58.8	56.5 *	61.8	58.5	-1.04	2.7	2.4	59.7	-0.58	3.4	1.7	15	LZ
EUL7XP	60.7	60.6	63.7 H	62.7	61.9	0.77	4.6	1.5	60.9	0.01	4.2	2.8	16	LC
GXFMMN	47.9 X	50.6 X	47.9 X	49.0 X	48.9	-6.09 X	4.0	1.3	48.8	-6.09 X	3.6	1.3	16	TC
HHY9JV	61.3	59.3	58.2	58.8	59.4	-0.56	3.2	1.3	59.0	-0.94	3.3	1.3	15	LZ
JN2LVK	65.6 *	64.0	63.4	61.1	63.5	1.61	3.2	1.9	64.0	1.61	2.8	1.6	12	TM
K6KRPV	64.1 H	60.5	59.5	56.9 H	60.3	-0.11	7.8	3.0	64.9	2.04 *	5.1	5.4 H	16	MB
KF3EYW	62.4	61.6	62.5	61.0 L	61.9	0.73	2.4	0.7	61.3	0.21	2.8	0.9	16	LD
KNXCLY	62.1 H	60.9	59.4	61.5	61.0	0.27	4.3	1.2	59.9	-0.49	4.1	1.8	12	LD
LBQQXZ	64.1	65.5 *	64.3	63.3	64.3	2.02 *	2.7	0.9	64.4	1.81	3.0	1.4	16	LD
LFWKRV	59.6	60.9	59.8	58.4	59.7	-0.41	3.5	1.0	59.3	-0.79	3.4	1.8	16	LD
LQJFTW	55.6	55.7 *	56.8	54.4 X	55.6	-2.55 *	3.0	1.0	54.9	-3.01 X	3.0	1.3	16	LD
LYA4NY	60.6	61.7	63.3	62.1	61.9	0.76	3.3	1.1	61.2	0.18	3.1	1.4	16	LC
LYTURR	58.1	57.7	59.7	60.2	58.9	-0.82	3.9	1.2	58.7	-1.11	4.4	1.6	16	TG
M6UG3R	62.7	62.7	63.6	62.6	62.9	1.28	3.0	0.5	61.7	0.43	3.6	1.9	16	LD
MPG93N	60.5	60.3	60.5	60.4	60.4	-0.02	2.9	0.1 L	60.2	-0.31	2.7	0.2 L	16	LD
MZZKFM	63.2 L	64.4	64.3 L	61.6	63.4	1.53	1.4	1.3	63.7	1.45	1.4	1.3	16	TD
NCN7YM	60.6	62.1	63.7	62.4	62.2	0.92	2.9	1.2	62.2	0.68	3.2	1.6	16	TU
NHH6DH	62.7	60.2	61.9	61.8	61.6	0.63	2.5	1.1	61.5	0.31	3.0	1.4	16	LD
NTYPVT	61.0	60.9	61.0	60.9 L	60.9	0.25	1.6	0.1 L	61.7	0.42	1.6	1.6	16	LD
NXAP9K	59.0	58.2	57.9	60.2	58.8	-0.86	3.8	1.0	59.2	-0.82	3.0	1.4	13	LC
Q4Q3ZH	61.2	61.4	61.8	61.9	61.5	0.57	2.0	0.3	60.9	0.03	2.2	0.5 L	16	LD
Q88K4K	59.6	67.9 XH	64.5	66.0 X	64.5	2.12 *	4.2	3.6 H	61.7	0.44	3.8	2.6	16	LC
QEMBHK	59.0	58.8	59.4	58.8 L	59.0	-0.78	2.1	0.3	59.3	-0.80	2.1	0.6 L	16	XX

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
RB8QKC	65.6 *H	56.0 *H	58.9	60.9 H	60.3	-0.07	5.9	4.0 H	63.6	1.39	6.8	3.2	16	LC
RL7N6Q	59.4	59.8	60.5	60.4	60.0	-0.24	2.4	0.5	61.1	0.14	2.8	1.5	16	LD
TQR8FK	57.2	58.6	60.3	61.9	59.5	-0.50	2.9	2.1	59.6	-0.64	2.9	1.3	16	TH
U4EPUA	61.7	60.5	60.9	61.4	61.1	0.35	3.9	0.5	61.1	0.15	4.2	3.8	16	XX
W86NDW	64.8	64.0	63.9	62.1	63.7	1.70	2.5	1.1	64.1	1.63	3.3	2.4	16	XX
W9GM87	60.2	59.2	61.8	59.9	60.3	-0.10	3.4	1.1	59.0	-0.93	2.9	1.8	16	LD
WCGPGF	60.1	61.1	59.9	60.8	60.5	0.01	3.2	0.6	60.4	-0.25	2.5	0.5 L	16	LC
WJJLH2	62.5	59.7	61.7	61.4	61.3	0.46	2.9	1.2	62.1	0.64	3.1	1.4	16	LD
X2GFBH	59.3	59.2	59.7	60.4	59.6	-0.43	2.0	0.5	59.8	-0.55	2.7	0.8	15	LD
X2Z38F	60.0	59.6	61.2	60.0	60.2	-0.13	2.7	0.7	58.7	-1.09	2.7	2.1	16	EN
XJDQCZ	60.3	60.2	62.4	60.1	60.7	0.14	2.4	1.1	59.6	-0.66	2.5	2.3	16	TJ
YN9XCN	56.3	57.9	57.6	59.4	57.8	-1.40	3.4	1.3	58.4	-1.24	3.0	1.8	16	LD
YVPFNA	49.0 X	50.4 XH	52.4 X	51.2 X	50.7	-5.11 X	4.7	1.4	52.8	-4.06 X	5.8	2.3	12	XX
ZVY8TW	60.0	58.5	59.3	58.7	59.1	-0.72	4.0	0.7	57.9	-1.51	3.2	1.6	16	LZ

Consensus (All Labs) Results

Wk Mean	60.49	60.29	60.79	60.28	Month Mean	60.46	Grand Mean	60.85
Avg SDr	3.06	3.07	3.36	3.93	Avg SD	3.38	Avg SD	3.31
SD btwn Labs	2.57	2.18	2.18	1.75	SD btwn Labs	1.90	SD btwn Labs	1.97
Labs Incld	45	45	46	43	SD btwn Wks	1.48	SD btwn Wks	2.28
Labs Excld	4	4	3	6	Labs Incld	45	Labs Incld	46
Labs not Rcvd	0	0	0	0				

Analysis Notes

9WPQJ3 - Data submitted for Test 240 may have been intended for Test 250.

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	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 T824

	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
24BDD7	77.2	77.8 *	79.0	78.1	78.0	1.84	2.4	0.8	77.6	1.56	2.3	0.8	16	LC
62TNFX	74.3 L	71.4	74.2	74.3	73.5	-0.35	1.4	1.4	73.5	-0.17	1.6	0.9	12	LZ
9WPQJ3	60.9 X	62.0 X	61.5 X	59.2 X	60.9	-6.49 X	3.3	1.2	69.3	-1.93 *	3.0	5.8 H	16	MB
BFDYRG	71.2	71.6	72.5	73.0	72.1	-1.06	2.5	0.8	71.7	-0.94	2.3	0.8	14	LZ
EUL7XP	75.6 H	71.2 H	81.1	71.3 H	74.8	0.28	5.0	4.7 H	75.5	0.65	4.4	2.8	16	XX
HHY9JV	74.7	74.5	78.1	72.8	75.0	0.38	1.9	2.2	75.2	0.53	2.7	1.3	15	LZ
KF3EYW	73.6	73.4	73.6	72.0	73.1	-0.53	2.0	0.8	72.3	-0.69	1.9	1.4	16	LD
KNXCLY	77.6	77.5	80.0	78.6 *	78.4	2.04 *	2.8	1.2	78.2	1.80	2.3	1.1	12	LD
LQJFTW	72.5	72.2	71.6	73.7	72.5	-0.84	2.7	0.9	74.3	0.18	2.3	1.5	16	LD
LYA4NY	75.9	71.7	75.9	72.1	73.9	-0.16	2.7	2.3	74.5	0.27	3.1	2.1	16	XX
MZZKFM	74.7	71.7 L	72.4	74.7 L	73.4	-0.43	1.4	1.5	73.1	-0.32	1.2	1.2	16	TD
NHH6DH	73.9	72.9	71.7	73.2	72.9	-0.63	2.2	0.9	72.6	-0.54	2.1	1.1	16	XX
NTYPVT	72.3	72.6	72.9	72.3	72.5	-0.84	1.8	0.3 L	72.7	-0.51	1.7	0.6	16	LD
Q4Q3ZH	73.9	72.9	72.2	71.9	72.7	-0.75	2.1	0.9	71.8	-0.88	2.3	0.9	16	LD
RL7N6Q	75.7	76.8	76.4 L	76.7	76.4	1.06	2.5	0.5	76.3	0.99	2.6	0.9	16	LD

Consensus (All Labs) Results

Wk Mean	74.50	73.43	75.12	73.90	Month Mean	74.24	Grand Mean	73.91
Avg SDr	2.36	2.61	2.18	2.90	Avg SD	2.53	Avg SD	2.49
SD btwn Labs	1.81	2.31	3.30	2.34	SD btwn Labs	2.05	SD btwn Labs	2.38
Labs Incld	14	14	14	14	SD btwn Wks	1.75	SD btwn Wks	2.00
Labs Excld	1	1	1	1	Labs Incld	14	Labs Incld	15
Labs not Rcvd	0	0	0	0				

Analysis Notes

9WPQJ3 - Data submitted for Test 250 may have been intended for Test 240.

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

	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
24BDD7	46.1	46.6	47.1	47.1	46.7	0.90	2.4	0.5	45.9	0.73	2.9	0.9	16	LC
9WPQJ3	33.0 *	34.8 *	28.9 X	34.2 *	32.7	-2.55 *	2.5	2.7 H	39.1	-0.94	2.6	4.1 H	16	MB
A9XV8A	44.1	43.8	43.7	44.0	43.9	0.21	2.4	0.2 L	43.7	0.20	2.2	1.1	16	LC
DF8LY6	50.1 L	49.8	49.8	50.4	50.0	1.72	1.6	0.3	49.4	1.61	1.8	1.2	12	LD
GXFMMN	37.3 H	40.6	38.2 H	38.0 H	38.5	-1.13	5.6	1.4	34.6	-2.05 *	4.3	4.8 H	16	TC
HEE7UB	No Data	39.8	35.9 *	38.3	38.0	-1.25	2.9	1.9	37.1	-1.44	2.7	2.5	15	LZ
JN2LVK	47.4	50.2 *L	51.0 *	50.2	49.7	1.64	2.3	1.6	49.0	1.51	2.3	1.5	12	LD
LQJFTW	46.6	45.8	45.1	46.0	45.9	0.70	3.1	0.6	45.3	0.60	2.9	0.8	16	LD
M6UG3R	46.5	45.0	46.6	45.9	46.0	0.73	1.7	0.7	45.3	0.60	2.1	1.1	16	LD
MPG93N	43.5 H	43.4 H	43.2 H	43.3 H	43.3	0.06	5.4	0.1 L	42.2	-0.18	6.2	2.3	16	LD
MTJ93L	43.0	42.0	42.1	42.4	42.4	-0.16	2.1	0.4	42.5	-0.11	2.2	1.0	16	TH
NCN7YM	37.4	39.0	38.7	38.7	38.4	-1.14	2.2	0.7	38.6	-1.07	2.4	1.0	16	TU
NHH6DH	41.9	43.2	43.0	40.3	42.1	-0.24	3.5	1.3	42.5	-0.11	3.5	0.8	16	LD
NXAP9K	45.9	44.8	43.7	48.5	45.7	0.66	3.6	2.1	45.8	0.72	2.9	1.6	13	LC
PAZ2VH	41.8 L	42.7	41.4 L	42.0 L	42.0	-0.26	1.1	0.5	41.9	-0.24	1.4	0.7	16	WK
Q4Q3ZH	42.7	42.2	43.4	43.1	42.8	-0.06	2.2	0.5	43.3	0.09	2.5	0.7	16	LD
Q88K4K	46.1	45.0	44.5	43.9	44.9	0.45	3.1	0.9	44.7	0.44	2.8	1.3	16	LD
RB8QKC	35.3 *	34.8 *	35.6 *	35.5	35.3	-1.92 *	2.6	0.4	32.7	-2.52 *	2.9	2.2	16	XX
RL7N6Q	44.7	45.8	45.7	46.1	45.6	0.62	2.1	0.6	45.6	0.66	2.2	2.0	16	LD
W9GM87	44.7	43.7	45.0	42.8	44.0	0.24	2.1	1.0	43.5	0.14	2.2	1.4	16	LD
WJJLH2	42.0	42.4	43.1	41.7	42.3	-0.18	2.1	0.6	43.6	0.16	2.2	2.4	16	LD
X2GFBH	44.6	42.8	43.9 L	43.7	43.8	0.17	2.0	0.7	45.1	0.53	2.2	1.1	16	LZ
X773WB	45.2	45.2	47.8	46.1	46.1	0.74	2.6	1.2	45.4	0.61	2.6	1.3	16	LZ
XJDQCZ	39.9	39.7	40.7	38.6	39.7	-0.83	2.5	0.9	38.2	-1.17	2.1	1.7	16	TJ
YVPFNA	47.0	46.0	47.5	44.3	46.2	0.78	2.6	1.4	46.4	0.86	2.4	1.3	12	XX
ZVY8TW	43.5	42.8	43.5	43.8	43.4	0.08	2.0	0.4	44.4	0.37	2.5	1.3	16	EM

Consensus (All Labs) Results

Wk Mean	43.21	43.14	43.61	43.03	Month Mean	43.06	Grand Mean	42.92
Avg SDr	2.94	2.61	2.91	2.78	Avg SD	2.81	Avg SD	2.80
SD btwn Labs	4.03	3.64	3.81	4.12	SD btwn Labs	4.05	SD btwn Labs	4.04
Labs Incld	25	26	25	26	SD btwn Wks	1.10	SD btwn Wks	1.89
Labs Excld	0	0	1	0	Labs Incld	26	Labs Incld	26
Labs not Rcvd	1	0	0	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	WK	Zwick Z005 Crush Tester
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
24BDD7	14.5	14.7	14.6	14.9	14.7	0.19	0.9	0.2	14.6	0.10	0.9	0.2	16	LU
A9XV8A	13.5	13.1 *H	13.3 *	12.9 *	13.2	-2.22 *	1.1	0.3	13.9	-1.34	1.0	0.6	16	LB
AT2LFX	13.5	13.7	14.1	14.6	14.0	-0.93	0.9	0.5	14.0	-1.00	0.9	0.4	15	LA
AXG9X9	15.1	15.4 H	15.3	16.0 *	15.5	1.50	1.1	0.4	15.2	1.26	1.1	0.3	15	LW
BXWPT2	15.0	14.1	14.3	14.0	14.4	-0.32	0.9	0.5	14.5	-0.09	0.9	0.4	16	LB
DF8LY6	15.7 *	15.6	14.6	14.8	15.2	1.03	0.8	0.6	15.3	1.55	1.1	0.4	12	LA
EKE8NN	14.3	14.1	14.9	15.1	14.6	0.06	1.0	0.5	14.4	-0.22	0.9	0.3	15	LB
GXFMMN	14.2	14.1	13.8	14.4	14.1	-0.69	1.1	0.3	14.2	-0.63	1.1	0.2	16	TS
JN2LVK	15.1	15.4	16.4 *	15.3	15.6	1.61	1.0	0.6	15.6	2.13 *	1.1	0.6	12	LA
K6KRPV	12.6 XL	13.3 L	13.7 L	13.6 L	13.3	-2.03 *	0.1	0.5	14.0	-1.05	0.1	1.1 H	16	BK
KW8NWB	15.4	16.0 *	15.1 H	16.0 *H	15.6	1.70	1.9	0.4	15.5	1.96 *	1.2	0.4	16	LH
LQJFTW	15.6	14.7	15.4	15.3	15.3	1.12	0.8	0.4	15.0	1.00	1.0	0.3	16	LA
NHW8KQ	27.7 XL	28.6 X	28.9 XL	28.0 X	28.3	22.17 X	0.6	0.6	21.6	13.84 X	0.5	7.2 H	8	LZ
NTYPVT	14.6 L	14.2	14.0 L	14.4 L	14.3	-0.40	0.5	0.3	14.4	-0.32	0.6	0.2	16	LA
Q4Q3ZH	14.2 H	14.2	14.4	14.3	14.3	-0.49	1.0	0.1	14.3	-0.50	1.0	0.2	16	LB
RL7N6Q	14.2	14.4	14.6	14.6	14.4	-0.20	0.9	0.2	14.4	-0.37	0.9	0.3	16	LZ
TQR8FK	14.4	14.6	14.3 L	14.8	14.5	-0.06	0.7	0.2	14.5	-0.15	0.7	0.2	16	TT
W86NDW	14.0	13.3 L	14.1	13.9 H	13.8	-1.22	1.0	0.4	13.6	-1.88	1.1	0.4	16	XX
W9GM87	14.4	14.9	15.6 L	14.2	14.8	0.32	1.0	0.6	14.4	-0.23	0.9	0.5	16	LZ
WCGPGF	14.3	14.5	15.0	14.1	14.5	-0.18	0.8	0.4	14.5	-0.01	0.8	0.4	16	LB
WJJLH2	14.9	15.1	15.0	14.9	15.0	0.66	0.9	0.1	15.1	1.08	0.9	0.2	16	LH
X773WB	14.4	14.7 H	15.1	15.2	14.8	0.43	1.2	0.3	14.3	-0.50	1.1	0.5	16	LA
YN9XCN	13.9	14.5	14.7	14.3	14.3	-0.35	1.0	0.3	14.3	-0.54	1.0	0.3	16	LU
YVPFNA	14.2 L	14.3 L	14.2 L	14.5 L	14.3	-0.43	0.1	0.1	14.2	-0.66	0.7	0.3	12	XX
ZEDEBK	15.1	14.9 L	15.8 L	13.9	14.9	0.56	0.6	0.8 H	14.6	0.21	0.9	0.6	16	LA
ZVY8TW	14.8	15.1	14.5	14.7	14.8	0.34	1.0	0.3	14.6	0.16	1.1	0.5	16	LZ

Consensus (All Labs) Results

Wk Mean	14.57	14.51	14.67	14.59	Month Mean	14.56	Grand Mean	14.54
Avg SDr	0.94	0.86	1.12	0.90	Avg SD	0.95	Avg SD	0.94
SD btwn Labs	0.60	0.73	0.71	0.69	SD btwn Labs	0.62	SD btwn Labs	0.51
Labs Incld	24	25	25	25	SD btwn Wks	0.40	SD btwn Wks	0.43
Labs Excld	2	1	1	1	Labs Incld	25	Labs Incld	25
Labs not Rcvd	0	0	0	0				

Analysis Notes

NHW8KQ - Data appears to be off by a factor of two.

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)	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