Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #599 (J) - August 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	EC12	Edgewise Compressive Strength, Wax (T811), Corrugated Board
203	EC12	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	42F	Roughness - Stylus Method, 42 lb Linerboard
229	42F1	Roughness - Sheffield Method, 42 lb Linerboard
231	42D	Internal Bond Strength, Linerboard, 42 lb Linerboard
234	42F	Coefficient of Static Friction - Inclined Plane, 42 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
2VGWMA	1,015.9	2.60	*	33.12	1,014.9	3.35	X	12.01	4	LG
2YF8NB	725.1	-1.95	*	43.19	792.2	-1.04		57.88	4	ET
2ZCMA9	882.2	0.51		30.79	889.8	0.88		5.39 L	4	LM
3YXG84	816.4	-0.52		41.61	772.1	-1.44		145.41 H	4	EX
4887K3	801.0	-0.77		38.00	756.4	-1.75		30.39	4	LS
6VKKJC	810.8	-0.61		28.24	870.5	0.50		46.42	4	LG
BUHJDM	899.0	0.77		44.62	835.2	-0.19		59.19	4	ER
D33KRN	880.6	0.48		53.03	879.7	0.68		2.16 L	4	LG
DQPKVU	865.9	0.25		30.86	885.5	0.80		39.13	4	LO
FDPTRZ	916.4	1.04		110.81 H	878.3	0.66		46.88	4	EX
G9TK2Y	870.1	0.32		17.70	832.4	-0.25		53.33	2	LC
GJU2YG	903.2	0.84		33.03	877.9	0.65		46.09	4	EX
HY29NH	817.4	-0.51		59.14	766.9	-1.54		63.72	4	TB
HY629C	801.4	-0.76		15.34	801.7	-0.85		40.45	4	LL
JNHZT3	821.3	-0.45		66.12	862.6	0.35		38.36	4	ER
K9NVZY	898.2	0.76		49.74	849.8	0.10		68.05	4	ES
KL7YRM	717.6	-2.07	*	55.33	760.8	-1.66		56.56	4	LS
PK696W	843.6	-0.10		48.21	866.1	0.42		23.86	4	ER
PTDYFL	823.1	-0.42		45.00	836.1	-0.18		19.17	4	LS
RMXBK8	950.4	1.57		32.84	948.2	2.04	*	20.93	4	ER
UY362A	827.9	-0.34		53.64	867.1	0.44		32.96	4	LS
VGVM4B	860.4	0.17		71.43	908.2	1.25		43.32	4	LS
WH4ZLC	839.6	-0.16		36.75	893.4	0.96		40.84	4	TE
X3AUT9	808.4	-0.65		47.98	845.4	0.01		65.25	4	LL
ZY4WMY	850.2	0.01		67.54	803.2	-0.82		41.50	4	LM

Consensus (All Labs) Results

Month Mean	849.84	Grand Mean	844.97
Avg SD	50.03	Avg SD Months	52.75
SD btwn Labs	63.85	SD btwn Labs	50.67
Labs Incld	25	Labs Incld	24

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	851.20	69.62	1.36	8
Clip sealing	848.16	65.12	1.68	16

Key to Instrument Codes Reported by Participants			
ER	Emerson 6200 Series	ES	Emerson 8510
ET	Emerson 7200	EX	Emerson Apparatus (Model not specified)
LC	L&W Crush Tester 48	LG	TLS / L.A.B. Validator Series
LL	Lansmont 76-5K	LM	Lansmont 122-15k
LO	Lansmont 152-30k	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 - EC12

TAPPI Official Test Method T811

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4887K3	38.2	0.61	1.34		38.2	0.72	0.02	2	LC
AL4P8T	41.4	1.50	1.71		40.9	1.51	0.68	2	LC
BR4984	31.6	-1.23	1.98		33.1	-0.77	2.18	2	XX
D33KRN	40.2	1.15	1.92		39.6	1.12	0.78	2	LE
ELKCT4	36.1	0.02	0.88	L	36.1	0.09	0.00	1	TD
FDPTRZ	35.0	-0.30	2.49		35.7	-0.02	1.09	2	LC
FGE63R	30.5	-1.54	3.41		31.9	-1.14	2.02	2	LD
JNHZT3	36.1	0.01	2.48		34.9	-0.26	1.66	2	EN
KL7YRM	30.1	-1.64	1.85		30.0	-1.68	0.12	2	EM
PQ8H94	38.5	0.67	2.11		38.5	0.78	0.00	1	LC
PTDYFL	36.3	0.08	2.05		36.4	0.19	0.13	2	LD
T2ELPA	35.0	-0.29	4.06	H	32.8	-0.89	3.15	2	WK
X3AUT9	40.7	1.31	1.36		40.3	1.32	0.64	2	XX
X9Z638	34.8	-0.35	2.24		32.4	-0.99	3.35	2	XX

Consensus (All Labs) Results

Month Mean	36.03	Grand Mean	35.78
Avg SD	2.28	Avg SD Months	1.72
SD btwn Labs	3.60	SD btwn Labs	3.41
Labs Incld	14	Labs Incld	14

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
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
227ANW	36.2	-1.38	3.98	H	37.6	-0.83	2.02	2	TD
2VGWMA	41.6	1.43	1.50		40.4	0.91	1.68	2	EM
2YF8NB	37.0	-0.97	1.12		38.0	-0.57	1.48	2	TD
2ZCMA9	38.5	-0.17	1.63		38.5	-0.29	0.06	2	EM
3YXG84	38.5	-0.16	1.47		38.5	-0.26	0.00	1	CT
4887K3	41.3	1.29	2.15		41.3	1.50	0.04	2	LC
6VKKJC	39.7	0.47	1.33		38.7	-0.12	1.40	2	TJ
8BEX3Q	37.6	-0.66	0.99		39.2	0.17	2.33	2	LD
AL4P8T	40.5	0.89	1.72		40.5	0.99	0.04	2	LC
BGKU62	40.1	0.64	1.60		41.0	1.32	1.38	2	LD
BR4984	38.6	-0.12	1.88		38.4	-0.35	0.33	2	IM
BUHJDM	40.6	0.90	2.60		40.3	0.85	0.40	2	TB
CMVB8M	39.2	0.20	1.48		39.0	0.06	0.27	2	TD
D33KRN	41.9	1.60	1.38		41.5	1.63	0.52	2	LY
DQPKVU	37.1	-0.91	1.19		37.1	-1.13	0.04	2	LD
ELKCT4	38.5	-0.17	0.85		38.5	-0.26	0.00	1	TD
F6H3GB	37.6	-0.66	1.12		37.5	-0.91	0.12	2	LD
FDPTRZ	36.6	-1.15	1.86		37.1	-1.12	0.72	2	LC
FGE63R	37.7	-0.56	2.48		36.8	-1.35	1.38	2	LD
GURTFU	38.3	-0.26	1.03		38.5	-0.26	0.25	2	EM
HY29NH	42.5	1.92 *	0.30	L	41.9	1.86	0.87	2	LD
HY629C	37.9	-0.47	1.29		38.0	-0.58	0.11	2	LC
JNHZT3	34.7	-2.17 *	2.70		35.2	-2.35 *	0.71	2	EN
K3B78P	39.5	0.33	1.70		39.6	0.44	0.25	2	TD
K9NVZY	38.1	-0.37	0.82		39.6	0.43	2.11	2	LD
KL7YRM	38.1	-0.39	1.32		38.2	-0.43	0.22	2	EM
MVRQLJ	36.7	-1.09	2.42		37.1	-1.16	0.46	2	EM
PK696W	37.7	-0.57	1.91		38.5	-0.25	1.11	2	LD
PTDYFL	41.4	1.36	0.89		41.5	1.63	0.13	2	LD
PWE428	40.1	0.68	1.65		40.3	0.88	0.28	2	TG
RMXBK8	39.7	0.48	0.95		39.1	0.11	0.91	2	EM
RUMRE7	36.7	-1.09	1.46		37.2	-1.11	0.59	2	XX
T2ELPA	19.2	-10.24 X	0.47	L	28.3	-6.69 X	12.79	2	WK
TG8DGC	40.7	0.98	0.95		40.8	1.20	0.18	2	LC
VGVM4B	39.5	0.36	1.51		38.6	-0.20	1.27	2	TB
WH4ZLC	41.6	1.43	1.35		40.0	0.66	2.24	2	LD
ZY4WMY	35.7	-1.65	1.75		37.1	-1.13	2.04	2	TG

Consensus (All Labs) Results

Month Mean	38.82	Grand Mean	38.92
Avg SD	1.70	Avg SD Months	1.10
SD btwn Labs	1.91	SD btwn Labs	1.59
Labs Incld	36	Labs Incld	36

Key to Instrument Codes Reported by Participants

CT	Con-Ten	EM	Emerson 1200 Series
EN	Emerson 2200	IM	Instron 5500 Series
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
TJ	TLS Compression Tester, Model CDM-5	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
37W346	114.8	112.2	114.8	113.0	113.7	0.74	6.4	1.3	112.5	0.72	6.1	1.4	16	RE
3YXG84	119.1	115.3	118.8 *	118.2	117.9	1.86	8.9	1.7	114.2	1.26	9.6	4.0	16	XX
47CKX3	120.0	117.3	117.3	120.1 *H	118.7	2.08 *	12.1	1.6	117.0	2.15	*11.7	3.4	16	LZ
4887K3	116.1	113.1	109.6	108.2	111.8	0.22	9.4	3.6	109.9	-0.13	8.8	2.8	16	AH
4CZABK	109.2	111.4	109.5	114.9	111.3	0.08	8.7	2.6	110.3	0.02	9.0	2.2	16	LA
4DCA7U	113.8	111.2	110.2	115.7	112.7	0.48	9.8	2.5	113.3	0.98	10.7	4.3	8	LA
4Z7TMJ	108.0	115.6	107.1	109.1	110.0	-0.26	8.1	3.9	106.2	-1.30	8.6	3.1	16	LA
63P9PK	106.8	111.6	106.9	109.1	108.6	-0.63	12.4	2.3	107.5	-0.89	11.2	2.3	16	LC
79Q4MP	107.8	109.7	116.0	104.6	109.5	-0.38	9.4	4.8	112.8	0.80	8.8	3.7	16	AH
7QDFG6	109.6	109.4 H	110.1	111.3	110.1	-0.23	9.7	0.8	107.2	-0.97	9.9	3.0	16	LB
8LDQD3	115.8	110.7	No Data	No Data	113.3	0.62	8.4	3.6	109.3	-0.32	8.5	3.5	8	LA
8M8ERR	109.1	108.8 L	110.7 L	112.5	110.3	-0.18	3.6	1.7	108.1	-0.68	4.9	1.8	16	LA
8V2JLT	110.6	110.5	110.5 L	110.9	110.6	-0.08	5.1	0.2 L	110.5	0.09	5.4	0.2 L	16	LJ
97WWGJ	111.2	115.0	109.5 L	111.5	111.8	0.23	8.1	2.3	108.9	-0.43	12.4	3.7	16	LC
A3W46Z	118.3	121.7 *	115.2	118.1	118.3	1.99 *	10.1	2.7	119.9	3.07	X10.2	3.0	12	TB
BGKU62	114.8	115.0	114.7	114.1	114.7	1.00	6.9	0.4 L	112.9	0.85	7.0	1.1	16	LA
BJEQL8	111.4 H	111.8 H	111.6	104.1	109.7	-0.33	13.6	3.7	105.9	-1.39	9.8	3.7	16	LC
BL6P2R	103.4	110.7	111.4	107.0	108.1	-0.76	9.7	3.7	110.7	0.16	9.0	3.6	16	LC
BUHJDM	104.7	107.1	106.3	110.5	107.1	-1.02	9.8	2.4	108.6	-0.54	8.9	2.5	16	LZ
CW2XGN	109.1	106.5	101.1 *	107.1	105.9	-1.35	9.2	3.4	107.8	-0.79	9.6	3.5	16	LA
D33KRN	116.2	113.9	116.0	117.0	115.8	1.30	7.5	1.3	115.9	1.80	7.6	2.8	16	AH
D4Y6EM	114.5	113.4	111.6 L	113.0	113.1	0.59	7.5	1.2	112.1	0.59	9.5	2.3	16	LC
DQL2W7	105.4	107.1	102.3	101.8 *	104.2	-1.83	9.3	2.5	104.6	-1.79	9.0	3.2	12	LA
DRK8AJ	116.1	115.8	112.2	112.3	114.1	0.85	11.1	2.1	116.1	1.87	10.8	3.2	16	LC
ELKCT4	114.1	112.6	112.9	113.3	113.2	0.62	8.3	0.6	110.7	0.14	10.1	2.9	12	XX
F6H3GB	108.9	101.6 *	111.5	103.4	106.3	-1.24	10.2	4.6	107.0	-1.05	9.4	3.3	16	LC
F9JY9Q	115.4	114.1	110.1	108.0	111.9	0.26	11.5	3.4	112.6	0.76	9.9	3.7	16	AX
FGE63R	109.2	105.8	108.8	107.1	107.7	-0.86	7.2	1.6	106.9	-1.06	7.0	2.6	16	LA
FZ9M8L	110.7 L	109.9	110.3 L	110.3	110.3	-0.17	4.1	0.3 L	108.9	-0.43	5.0	1.7	16	LA
GJU2YG	112.6	106.4	109.6	108.6	109.3	-0.44	7.9	2.6	108.7	-0.49	8.6	2.9	16	AH
H7M884	113.2	102.8	113.1	116.1	111.3	0.09	9.5	5.8	110.6	0.11	9.6	4.3	12	LC
H83P9N	112.6	112.6	107.4	108.9	110.4	-0.16	7.4	2.7	109.5	-0.25	7.7	2.1	16	LA
H8BX3G	110.7	107.7	109.0	111.4	109.7	-0.33	7.5	1.7	109.7	-0.17	6.7	1.5	16	TP
JL9A9Z	113.9	114.5	114.2	116.7	114.8	1.04	9.0	1.3	116.9	2.11	* 8.7	7.5 H	12	LC
K98WNM	114.0	116.1	104.2 H	108.7	110.7	-0.05	19.5	5.3	109.8	-0.14	12.9	4.2	16	TB

Containerboard Interlaboratory Testing Program
Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42F1
TAPPI Official Test Method T807

Report #599 (J)
August 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
K9NVZY	113.3	109.7	104.0	112.9	110.0	-0.26	8.9	4.3	110.5	0.09	8.7	3.6	16	LA
KQX7BV	101.3 *	110.7	104.2	107.4	105.9	-1.36	10.4	4.1	107.2	-0.98	9.2	3.3	16	LA
KUHYGW	113.6	107.9	116.5	114.6	113.2	0.60	10.2	3.7	113.2	0.93	10.2	3.9	12	AH
LRA7Y4	102.2 *	108.8	108.5	109.2	107.2	-1.01	9.3	3.3	107.9	-0.76	8.6	2.7	15	LC
P73UPK	110.0	109.2	106.4	107.3	108.2	-0.73	8.4	1.7	109.6	-0.21	9.9	3.4	16	LC
PFBCF6	111.1	102.3 *	104.0	104.8	105.6	-1.45	7.9	3.8	106.6	-1.15	8.4	3.6	12	LC
PK696W	117.0	116.9	118.7	114.1	116.7	1.55	9.2	1.9	113.5	1.04	9.2	3.1	16	AH
PQ8H94	117.2	113.3	114.1	114.3	114.7	1.02	8.9	1.7	113.7	1.11	9.1	3.2	12	LA
PTDYFL	103.8	103.2	101.0 *	101.5 *	102.4	-2.31 *	9.6	1.3	105.6	-1.48	8.2	2.5	16	LA
PYEBBH	110.2	108.5	107.5	108.7	108.7	-0.60	6.5	1.1	109.5	-0.25	6.2	1.0	16	AH
RMKH9D	115.5	119.4 *L	112.5 L	116.2	115.9	1.34	5.8	2.8	112.3	0.66	5.1	3.0	15	XX
TJWKYD	103.8	108.5	109.9	112.7	108.7	-0.60	10.6	3.7	115.1	1.56	10.8	6.6	16	LA
U74GX8	106.2	106.2	92.5 XL	112.1	104.2	-1.80	7.4	8.3 H	104.3	-1.90	7.4	4.5	16	AH
V9MZKB	112.7	108.6	No Data	No Data	110.6	-0.08	7.9	2.9	107.4	-0.91	8.5	4.1	8	LJ
VQT49M	116.8	117.4	113.4 L	119.0	116.6	1.54	5.7	2.3	112.9	0.84	9.1	4.2	16	TB
W7DE8U	108.2	110.5	111.6	113.6	111.0	0.01	8.8	2.2	108.7	-0.51	9.4	4.4	16	LC
WCZ4R4	111.8	112.4	114.0	115.8	113.5	0.69	8.0	1.8	110.0	-0.09	9.2	3.5	12	LA
ZFQNWX	110.7	109.0	106.1	113.0	109.7	-0.33	10.9	2.9	111.4	0.38	9.3	3.5	16	LC

Consensus (All Labs) Results

Wk Mean	111.44	110.96	110.34	111.25	Month Mean	110.93	Grand Mean	110.25
Avg SDr	8.53	9.05	10.40	8.98	Avg SD	9.21	Avg SD	8.99
SD btwn Labs	4.46	4.28	4.35	4.45	SD btwn Labs	3.71	SD btwn Labs	3.13
Labs Incld	53	53	50	51	SD btwn Wks	3.04	SD btwn Wks	3.42
Labs Excld	0	0	1	0	Labs Incld	53	Labs Incld	52
Labs not Rcvd	0	0	2	2				

Key to Instrument Codes Reported by Participants

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
37W346	97.0	95.4 L	96.8	96.6	96.5	1.46	5.2	0.7	97.0	2.33 *	5.1	1.3	12	RE
3YXG84	97.3	96.7	95.5	101.0 *	97.6	1.83	8.5	2.4	94.8	1.35	8.8	3.3	12	XX
47CKX3	97.6	97.4	104.2 X	97.6	99.2	2.32 *	9.3	3.4	99.4	3.40 X	9.1	2.6	12	LZ
4887K3	86.8	90.1	87.2	83.5 *	86.9	-1.52	8.5	2.7	88.8	-1.32	7.7	2.9	12	AH
4CZABK	92.3	95.5	91.8	92.6	93.1	0.40	8.0	1.7	91.4	-0.17	7.4	3.0	12	LA
4DCA7U	91.8	95.2	91.5 H	94.4	93.2	0.45	9.4	1.8	93.2	0.66	9.4	1.8	4	LA
4Z7TMJ	91.7	91.3	85.1	96.7	91.2	-0.18	8.9	4.7	89.5	-0.98	7.6	3.2	12	LA
63P9PK	90.7	91.1	90.0	87.4	89.8	-0.62	9.3	1.7	89.4	-1.02	8.9	3.5	12	LC
79Q4MP	89.9	93.5	95.0	92.4	92.7	0.29	7.6	2.1	95.8	1.80	7.5	3.2	12	AH
7QDFG6	86.4	89.1	89.0 L	86.8	87.8	-1.23	8.5	1.4	86.7	-2.24 *	8.0	1.9	12	LB
8LDQD3	91.8	94.7	No Data	No Data	93.3	0.46	7.2	2.1	89.7	-0.89	7.4	3.6	6	LA
8M8ERR	96.0 L	97.3 L	94.1	94.0 L	95.4	1.12	3.5	1.6	92.4	0.31	5.2	3.0	12	LA
8V2JLT	90.1	90.4	90.9	90.3	90.4	-0.42	4.8	0.3 L	91.1	-0.30	4.9	0.5 L	12	LJ
97WWGJ	88.0	91.7	90.5	91.6	90.5	-0.41	6.6	1.7	89.6	-0.94	7.9	1.9	12	LC
A3W46Z	100.4 *	104.6 X	97.3	98.2	100.1	2.61 *	7.6	3.3	100.7	3.97 X	7.6	3.1	8	TB
BGKU62	93.7	92.7	92.0	92.7	92.8	0.31	4.6	0.7	93.0	0.54	4.6	0.5 L	12	LA
BJEQL8	97.6	93.7	98.5 *	86.0	94.0	0.69	7.1	5.7 H	91.1	-0.28	7.9	3.9	12	LC
BL6P2R	91.7	88.9	90.6	98.2	92.3	0.17	8.9	4.1	93.1	0.62	8.1	3.2	12	LC
BUHJDM	92.6	85.9	92.1	92.0	90.7	-0.35	8.5	3.2	91.3	-0.18	7.8	3.1	12	LA
CW2XGN	91.8	92.4	92.2	87.1	90.9	-0.28	8.5	2.5	91.9	0.09	8.1	3.2	12	LA
D33KRN	91.8	93.3	92.1	95.0	93.1	0.40	6.8	1.5	95.0	1.45	8.9	3.2	12	AH
D4Y6EM	93.7	97.8	96.4	91.3	94.8	0.95	8.7	2.9	93.3	0.67	8.7	3.5	12	LC
DQL2W7	86.3	83.7 *	79.3 X	83.8	83.2	-2.67 *	9.9	2.9	90.4	-0.61	9.0	10.0 H	12	LA
DRK8AJ	98.1	92.2	94.8	95.4	95.1	1.05	9.7	2.4	94.7	1.30	9.2	3.3	12	LC
ELKCT4	90.7	90.9 H	87.6	91.5	90.2	-0.50	12.1	1.7	90.7	-0.45	12.0	1.5	12	XX
F6H3GB	92.9	93.5	89.7	94.6	92.7	0.28	7.3	2.1	91.1	-0.27	7.7	2.4	12	LC
F9JY9Q	91.9	91.7	94.0	95.7	93.3	0.49	8.6	1.9	94.9	1.41	8.6	2.7	12	AX
FGE63R	84.2 *	85.1	89.8	85.9	86.2	-1.73	5.3	2.5	88.2	-1.54	6.7	2.6	12	LA
FZ9M8L	89.2	90.3	91.6	88.8	90.0	-0.56	4.6	1.3	89.6	-0.93	4.3	1.5	12	LA
GJU2YG	94.0	89.2	85.6	93.0	90.5	-0.41	6.0	3.8	92.4	0.28	7.9	3.4	12	AH
H7M884	91.0	88.3	92.0	96.3	91.9	0.04	8.1	3.3	91.4	-0.14	7.3	2.4	8	LC
H83P9N	91.3	91.8	93.2	93.8	92.5	0.23	9.2	1.2	93.3	0.67	8.0	4.3	12	LA
H8BX3G	93.5	89.0	88.4	87.9	89.7	-0.65	5.7	2.6	90.2	-0.69	5.7	1.7	12	TP
JL9A9Z	102.9XH	98.3	104.6 X	101.2 *	101.8	3.13 X	9.5	2.7	100.4	3.84 X	8.7	6.1	12	LC
K98WNM	91.5	90.8	89.3	89.6	90.3	-0.46	7.4	1.0	91.6	-0.04	7.6	2.2	12	TB

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
K9NVZY	90.4	89.1	97.8	89.0	91.6	-0.06	9.6	4.2	93.3	0.67	8.3	4.2	12	LA
KQX7BV	84.9	83.3 *	84.8 *	91.4	86.1	-1.78	7.7	3.6	88.6	-1.38	7.4	3.3	12	LA
KUHYGW	95.3	93.1	97.7	94.6	95.2	1.07	9.0	1.9	98.9	3.15 X	8.3	5.4	12	AH
LRA7Y4	87.3	95.4	89.7	87.1	89.9	-0.59	8.4	3.9	90.1	-0.74	7.7	3.0	12	LA
P73UPK	87.4	87.5	87.4	87.1	87.3	-1.39	6.7	0.2 L	90.4	-0.59	6.7	2.9	12	LC
PFBCF6	90.5	92.6	93.2	87.0	90.8	-0.30	7.3	2.8	90.8	-0.44	7.5	2.8	12	LC
PK696W	92.7	92.3	95.4	90.8	92.8	0.32	9.6	1.9	94.2	1.09	8.2	3.0	12	AH
PQ8H94	98.0	98.4	90.9 H	89.5	94.2	0.76	9.7	4.7	95.1	1.47	9.0	3.8	8	LA
PTDYFL	88.4	92.4	90.1	90.4	90.3	-0.46	9.8	1.6	89.8	-0.86	8.9	1.8	12	LA
PYEBBH	90.8	91.2	90.5	90.6	90.8	-0.31	5.0	0.3 L	91.2	-0.23	5.0	0.9 L	12	AH
RMKH9D	93.9	94.4	91.1	92.0	92.9	0.34	5.9	1.6	91.0	-0.31	5.4	3.1	12	XX
TJWKYD	83.8 *	89.6	92.2	87.5	88.3	-1.09	7.4	3.6	95.2	1.52	8.2	5.9	12	LA
U74GX8	90.2	91.7	92.4	90.1	91.1	-0.21	6.7	1.2	89.5	-0.99	7.5	2.8	12	AH
V9MZKB	91.3	84.5 *	No Data	No Data	87.9	-1.21	7.7	4.8	90.3	-0.63	7.9	2.7	8	LJ
VQT49M	92.8	96.8 H	90.6 L	97.5	94.4	0.84	8.6	3.3	94.0	1.00	9.0	2.6	11	TB
W7DE8U	90.4	95.9	89.3	88.0	90.9	-0.28	8.1	3.5	89.7	-0.89	7.0	2.8	12	LC
WCZ4R4	94.0	90.6	89.2	91.7	91.4	-0.13	9.1	2.0	91.0	-0.31	9.2	2.2	8	LA
ZFQNWX	97.7	97.7	87.6	95.0	94.5	0.85	8.2	4.8	94.3	1.12	7.8	3.8	12	LC

Consensus (All Labs) Results

Wk Mean	91.83	92.02	91.55	91.80	Month Mean	91.77	Grand Mean	91.74
Avg SDr	8.07	8.33	7.30	7.99	Avg SD	7.96	Avg SD	7.78
SD btwn Labs	3.74	3.75	3.34	4.23	SD btwn Labs	3.20	SD btwn Labs	2.26
Labs Incld	52	52	48	51	SD btwn Wks	2.78	SD btwn Wks	3.25
Labs Excld	1	1	3	0	Labs Incld	52	Labs Incld	49
Labs not Rcvd	0	0	2	2				

Key to Instrument Codes Reported by Participants

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
227ANW	89.9	89.9 L	93.6	93.5	91.7	0.34	3.1	2.1	91.4	0.56	3.0	3.4	16	TD
37W346	89.4 L	90.7	90.1	89.8	90.0	-0.06	1.9	0.6	85.9	-1.02	2.8	5.0	16	LZ
3UP2XF	92.0	No Data	No Data	No Data	92.0	0.40	2.4	0.0	92.9	1.00	2.8	1.6	13	LD
47CKX3	89.2	90.3	93.0	88.2	90.2	-0.02	2.6	2.1	89.3	-0.03	2.7	1.5	16	LC
4887K3	91.9	91.0	91.4	90.6	91.2	0.22	2.7	0.5	90.6	0.34	2.8	1.7	16	LC
4CHJ3Z	72.9 X	72.5 X	76.4 *H	75.1 X	74.2	-3.75 X	4.1	1.9	76.2	-3.84 X	3.6	2.1	16	LC
4DCA7U	96.7	97.5	96.1	95.6	96.5	1.44	3.1	0.8	93.7	1.23	4.5	8.5 H	8	LD
4Z7TMJ	85.7	87.8	88.1	85.8	86.8	-0.80	3.3	1.3	88.0	-0.43	3.8	3.3	16	LZ
63P9PK	88.0	89.2	91.1	90.0	89.6	-0.16	2.3	1.3	88.6	-0.23	2.8	1.8	16	LD
79Q4MP	90.1	91.2	No Data	No Data	90.6	0.08	4.0	0.8	89.1	-0.10	4.1	2.7	14	LC
7QDFG6	92.6	93.8	88.6	89.8	91.2	0.21	2.8	2.4	88.7	-0.22	3.1	3.0	16	LC
8LDQD3	89.0	88.7	83.6	88.7	87.5	-0.65	2.6	2.6	87.1	-0.66	3.1	2.6	16	LC
8M8ERR	82.7 L	83.0 L	84.4	84.3	83.6	-1.56	1.9	0.9	76.6	-3.73 X	2.3	5.8	16	TU
8V2JLT	91.3	91.4	91.6	91.1	91.3	0.25	2.8	0.2 L	90.6	0.33	2.6	0.5 L	16	LD
8WC7HL	82.7	84.3	82.7	83.4	83.3	-1.64	3.0	0.8	85.6	-1.10	3.1	2.0	16	EX
97WWGJ	92.3	93.5	91.1	92.4	92.3	0.48	2.7	1.0	88.7	-0.22	3.7	9.8 H	16	LC
9DWC7Q	88.6	89.9	90.2	88.7	89.3	-0.22	2.3	0.8	88.3	-0.34	2.8	1.0	16	MB
A3W46Z	98.1	102.8 X	100.4	103.3 X	101.2	2.54 *	2.9	2.4	101.0	3.35 X	3.4	2.5	12	LX
AL4P8T	87.6	87.1	89.2	88.5	88.1	-0.51	3.1	0.9	87.1	-0.66	2.6	1.1	16	LC
B8J7C4	89.1	81.6 *L	87.5	90.1	87.1	-0.74	2.8	3.8	89.7	0.08	3.1	3.8	12	LZ
BGKU62	92.7	92.6	92.9	93.0	92.8	0.59	3.6	0.2 L	92.0	0.75	3.1	0.7 L	16	LD
BJEQL8	95.3	92.6	96.3 H	94.3	94.6	1.01	3.5	1.6	92.4	0.87	3.5	2.7	16	LD
BL6P2R	80.7 *	91.0	90.9	89.7	88.0	-0.52	3.2	5.0	88.6	-0.23	3.1	2.6	16	LD
BR4984	84.8	84.4	83.4	83.8	84.1	-1.43	3.9	0.6	82.7	-1.95 *	5.2	2.2	8	MB
BUHJDM	93.0	93.2	91.5	94.0	92.9	0.62	3.1	1.0	88.9	-0.16	4.7	4.5	16	LD
CW2XGN	100.5 *	100.3 *	97.0	100.2 *	99.5	2.15 *	3.7	1.7	100.7	3.26 X	3.4	2.7	16	LD
D33KRN	89.7	89.3	88.5	90.4	89.4	-0.19	2.8	0.8	88.9	-0.15	2.9	1.9	16	LG
D4Y6EM	91.1	94.8	95.6 L	91.6	93.3	0.70	2.3	2.3	92.1	0.77	2.6	2.2	16	LD
F6H3GB	87.5	87.0	91.3	89.3	88.8	-0.35	3.6	1.9	88.3	-0.32	3.3	1.5	16	LD
F9JY9Q	82.5	81.6 *	78.8 *	84.5	81.9	-1.96 *	3.9	2.4	81.1	-2.43 *	4.1	5.7	16	LC
FGE63R	89.1	88.4	87.4	88.6	88.4	-0.45	2.6	0.7	88.0	-0.43	2.5	1.5	16	LD
FZ9M8L	90.0	89.7	91.2	90.2	90.3	0.00	2.1	0.6	90.4	0.27	2.4	0.7 L	16	LZ
GURTFU	90.9	90.4	92.6	90.5	91.1	0.19	3.4	1.0	90.6	0.34	2.8	0.9 L	16	EM
H7M884	84.6	85.5	85.6	85.6 H	85.3	-1.16	3.6	0.5	87.3	-0.62	2.9	2.9	12	LD
H83P9N	84.0	85.7	86.2	86.9	85.7	-1.07	3.0	1.3	87.9	-0.44	3.0	2.4	16	LD

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42F1

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
H8BX3G	89.5	89.0	87.7	90.0	89.1	-0.28	3.1	1.0	89.9	0.15	3.1	1.3	16	TJ
JNHZT3	82.7	85.7	86.1	83.3	84.4	-1.36	2.7	1.7	83.2	-1.82	2.6	1.8	16	EN
KQX7BV	87.1	87.8	87.6	92.0	88.6	-0.39	3.5	2.2	91.1	0.49	3.4	2.3	16	LD
LRA7Y4	88.8	89.3	90.3	91.2	89.9	-0.09	2.8	1.1	89.6	0.06	2.8	1.4	16	LD
MMCZRQ	94.1	117.6 XH	85.2	93.9	97.7	1.72	5.6	13.9 H	92.1	0.79	4.7	12.0 H	15	MB
P73UPK	91.6	94.3	93.3	92.2	92.9	0.60	4.4	1.2	95.9	1.88	6.7	2.8	16	LC
PK696W	74.1 X	75.6 X	75.4 *	72.5 X	74.4	-3.70 X	2.3	1.4	84.8	-1.36	2.5	6.3	16	LD
PQ8H94	85.1	81.8	82.6	84.8	83.6	-1.56	4.8	1.6	90.7	0.37	5.2	6.5	12	LC
PTDYFL	88.3	92.4	93.3	92.9	91.7	0.34	2.7	2.3	91.7	0.67	3.0	1.6	16	LD
PWE428	92.6	94.4	95.9	95.9	94.7	1.03	2.3	1.6	94.1	1.35	2.4	1.3	16	TH
R7FBTC	91.0 H	87.0 H	90.1	90.8	89.7	-0.13	5.4	1.8	89.6	0.06	6.1	5.1	15	MB
R9EH4N	83.2 L	82.7 L	82.6 L	83.1 L	82.9	-1.72	1.3	0.3 L	82.5	-2.01 *	1.8	0.9 L	16	RS
RMKH9D	86.7	87.8	85.9	79.4 *	85.0	-1.24	3.4	3.8	83.2	-1.82	3.1	3.9	15	LD
T9D8MB	92.8	93.6	94.5	93.8	93.6	0.78	3.5	0.7	91.8	0.70	3.5	1.7	12	TH
TJWKYD	96.6	94.9	94.6	97.1	95.8	1.28	2.8	1.3	96.7	2.10 *	3.1	2.7	16	LZ
U74GX8	99.3 *	87.0	104.7 *H	97.7	97.2	1.61	4.7	7.4 H	93.8	1.26	4.1	5.0	16	LZ
V9MZKB	89.9	95.6	No Data	No Data	92.7	0.57	3.0	4.0	91.9	0.71	3.1	2.2	8	LD
VQT49M	No Data	No Data	No Data	87.1	87.1	-0.74	2.8	0.0	87.9	-0.43	3.7	3.1	9	LD
WH4ZLC	92.5	94.1 L	92.8	93.7	93.2	0.69	1.5	0.7	93.2	1.09	1.8	0.7 L	16	LD
XVDY4B	97.4	95.8	96.2	96.2	96.4	1.42	3.6	0.7	96.5	2.05 *	3.5	1.9	16	MB
YN4YA8	90.7	88.7	89.5	90.8	89.9	-0.08	3.2	1.0	86.7	-0.78	3.4	2.6	16	LD
ZFQNWX	91.1	89.7	90.0	87.7	89.6	-0.16	3.4	1.4	88.4	-0.29	3.4	2.4	16	LD

Consensus (All Labs) Results

Wk Mean	89.89	89.78	89.74	90.13	Month Mean	90.28	Grand Mean	89.43
Avg SDr	3.33	3.30	3.06	3.07	Avg SD	3.22	Avg SD	3.46
SD btwn Labs	4.44	4.22	5.54	4.23	SD btwn Labs	4.29	SD btwn Labs	3.45
Labs Incld	54	51	53	51	SD btwn Wks	2.79	SD btwn Wks	3.71
Labs Excld	2	4	0	3	Labs Incld	55	Labs Incld	53
Labs not Rcvd	1	2	4	3				

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	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)

	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
227ANW	78.7 H	77.1	73.9 H	77.0	76.7	-0.43	5.8	2.0	71.7	-1.38	3.5	4.2	12	TD
37W346	78.7 L	78.3	79.1	78.5	78.6	0.05	2.4	0.3 L	75.7	-0.51	2.6	2.4	12	LZ
3UP2XF	84.8	No Data	No Data	No Data	84.8	1.54	2.2	0.0	82.8	0.99	3.5	2.0	9	LD
47CKX3	77.7	79.3	78.6	76.2	78.0	-0.11	3.2	1.3	77.9	-0.05	3.3	1.6	12	LC
4887K3	80.0	79.8	79.7	79.8	79.8	0.33	3.9	0.1 L	80.5	0.51	3.9	0.8 L	12	LC
4CHJ3Z	59.8 X	63.4 X	63.1 XH	62.5 XH	62.2	-3.91 X	5.4	1.7	65.5	-2.69 *	4.8	3.7	12	LC
4DCA7U	82.1	83.9	82.9	81.3	82.5	0.99	3.4	1.1	82.5	0.95	3.4	1.1	4	LC
4Z7TMJ	78.0	77.7	76.2	78.1	77.5	-0.23	3.7	0.9	78.2	0.02	4.4	3.1	12	LZ
63P9PK	81.3	82.2	83.9	81.8	82.3	0.93	3.8	1.2	80.3	0.47	4.1	2.0	12	LD
79Q4MP	81.8 H	78.6 H	81.2	No Data	80.5	0.50	6.9	1.7	79.4	0.28	5.1	4.1	11	LC
7QDFG6	83.8	79.6	80.1 H	82.1 H	81.4	0.71	5.7	2.0	78.5	0.08	4.5	3.1	12	LC
8LDQD3	75.6	77.1 L	72.6	76.7	75.5	-0.71	2.7	2.0	75.5	-0.56	2.8	2.6	12	LC
8M8ERR	74.6 L	74.9 L	73.8	76.1	74.8	-0.87	1.8	1.0	70.6	-1.61	2.1	4.3	12	TU
8V2JLT	81.1	81.2 L	81.3	81.4	81.3	0.68	2.7	0.1 L	80.6	0.54	2.5	0.5 L	12	LD
8WC7HL	72.2	72.8	73.0	72.0	72.5	-1.43	3.6	0.5	74.8	-0.71	3.5	1.9	12	EX
97WWGJ	85.4	78.7	81.1	84.4	82.4	0.95	2.7	3.1	82.0	0.82	2.6	2.3	12	LC
9DWC7Q	72.3	71.6	72.5	73.1	72.4	-1.46	2.3	0.6	73.3	-1.03	2.8	0.9	12	MB
A3W46Z	89.3 *	86.2 *	88.0 *	85.5	87.3	2.12 *	3.5	1.7	89.6	2.46 *	4.0	2.9	8	LX
AL4P8T	78.0	79.2	79.2	81.0	79.3	0.21	3.4	1.2	78.8	0.16	3.3	0.8	12	LC
B8J7C4	77.9	74.1	75.6	78.3	76.5	-0.47	3.1	2.0	79.4	0.28	3.1	4.2	8	LZ
BGKU62	79.8	80.1	80.2	79.6	79.9	0.36	2.9	0.3 L	80.2	0.45	2.9	0.4 L	12	LD
BJEQL8	82.0	78.2	82.9	79.5	80.7	0.53	4.1	2.2	81.3	0.68	4.3	1.5	12	LD
BL6P2R	79.2 L	67.9 *	78.8	80.5	76.6	-0.44	4.1	5.9 H	77.6	-0.11	3.6	3.5	12	LD
BR4984	69.6	70.1	69.2 *	69.3 *	69.5	-2.15 *	3.1	0.4 L	69.5	-1.84	3.1	0.4 L	4	MB
BUHJDM	83.8	84.1	80.6	86.1	83.7	1.26	3.5	2.3	80.3	0.47	3.6	3.3	12	LD
CW2XGN	87.4	84.8	85.0	87.1 *	86.1	1.84	3.2	1.3	88.4	2.21 *	3.4	2.2	12	LD
D33KRN	81.5	81.1	75.2	79.3	79.3	0.20	3.2	2.9	79.9	0.39	3.0	2.2	12	LG
D4Y6EM	78.3	81.7	82.5	80.7	80.8	0.57	2.7	1.8	80.8	0.58	2.5	1.5	12	LD
F6H3GB	76.3	74.5	78.6	76.9	76.6	-0.45	3.7	1.7	76.7	-0.31	3.7	1.3	12	LD
F9JY9Q	67.9 *	71.0	70.7	75.4	71.3	-1.73	3.3	3.1	69.6	-1.83	4.0	4.4	12	LC
FGE63R	75.8	79.6	75.1	76.3	76.7	-0.42	3.6	2.0	77.3	-0.16	3.0	1.9	12	LD
FZ9M8L	79.5 L	78.3	79.8	78.8	79.1	0.16	2.2	0.7	80.3	0.46	2.2	1.8	12	LZ
GURTFU	78.0	78.5	78.1	78.3	78.2	-0.05	2.8	0.2 L	79.0	0.19	2.7	0.9	12	EM
H7M884	70.9	73.4	73.1	73.0	72.6	-1.41	2.4	1.1	74.1	-0.86	2.5	2.4	8	LD
H83P9N	74.0	75.9	73.4	72.7	74.0	-1.07	2.6	1.4	76.8	-0.29	3.4	3.5	12	LD

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 35 lb Linerboard - 35E1

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
H8BX3G	78.4	77.0	78.5	77.7	77.9	-0.13	3.3	0.7	77.7	-0.08	3.2	1.2	12	TJ
JNHZT3	77.5	76.6	76.1	77.1	76.8	-0.39	3.7	0.6	76.3	-0.38	3.3	1.1	12	EN
KQX7BV	75.7	74.3	75.8	80.0	76.4	-0.48	3.9	2.5	79.9	0.38	3.7	3.2	12	LD
LRA7Y4	79.4	78.1	82.3	78.2	79.5	0.25	3.2	2.0	79.8	0.36	2.9	1.3	12	LD
MMCZRQ	78.7	101.1 X	74.5 H	82.1	84.1	1.36	5.7	11.7 H	84.4	1.35	6.4	10.4 H	10	MB
P73UPK	72.6	73.8	72.8	73.7	73.2	-1.26	3.5	0.6	77.1	-0.21	5.1	3.2	12	LC
PK696W	85.9 L	86.8 *	86.2	85.5	86.1	1.85	2.3	0.5	79.5	0.31	3.2	5.0	12	LD
PQ8H94	69.6	70.5	71.2	71.5	70.7	-1.87	3.9	0.8	68.1	-2.15 *	6.3	3.1	8	LC
PTDYFL	78.6	83.6	79.6	80.7	80.6	0.53	3.6	2.2	80.4	0.49	2.9	1.4	12	LD
PWE428	79.6	78.5	80.3	80.6	79.7	0.32	3.8	0.9	80.3	0.46	3.2	1.0	12	TH
R7FBTC	70.3 H	80.6	70.3	75.3	74.1	-1.04	4.4	4.9	75.0	-0.67	5.0	6.3 H	11	MB
R9EH4N	73.2	73.8 L	74.0	75.1 L	74.0	-1.06	1.7	0.8	71.2	-1.47	1.7	2.8	12	RS
RMKH9D	72.0	72.4	72.2	68.4 *	71.3	-1.73	2.6	1.9	71.1	-1.51	3.2	3.3	12	LD
T9D8MB	76.3	74.8	80.2	79.0	77.6	-0.21	3.5	2.5	77.4	-0.16	3.4	1.6	12	TH
TJWKYD	84.3	80.0	83.3	85.5	83.3	1.17	2.9	2.4	85.4	1.56	3.6	2.3	12	LZ
U74GX8	82.7	78.3	78.8	87.2 *	81.7	0.79	4.1	4.1	81.3	0.67	5.0	3.4	12	LZ
V9MZKB	81.7	80.4	No Data	No Data	81.0	0.62	3.7	0.9	82.3	0.90	3.3	1.6	8	LD
VQT49M	No Data	No Data	No Data	75.2 H	75.2	-0.78	6.1	0.0	75.4	-0.58	4.9	1.8	8	LC
WH4ZLC	83.3	82.4 L	83.2 L	83.1	83.0	1.10	1.7	0.4 L	82.0	0.83	2.3	1.1	12	LD
XVDY4B	83.1	75.0 H	82.8	80.3	80.3	0.45	12.5	3.7	83.3	1.10	10.7	4.5	12	MB
YN4YA8	80.5	79.8	78.0	81.4	79.9	0.36	4.0	1.5	78.3	0.04	3.7	2.2	12	LD
ZFQNWX	79.1	77.7	75.5	75.8	77.1	-0.33	2.9	1.7	76.7	-0.30	3.9	2.0	12	LD

Consensus (All Labs) Results

Wk Mean	78.54	77.84	77.95	78.68	Month Mean	78.44	Grand Mean	78.11
Avg SDr	3.57	4.97	3.33	3.37	Avg SD	3.93	Avg SD	3.90
SD btwn Labs	4.76	4.17	4.42	4.33	SD btwn Labs	4.15	SD btwn Labs	4.68
Labs Incld	55	53	53	53	SD btwn Wks	2.55	SD btwn Wks	3.01
Labs Excld	1	2	1	1	Labs Incld	56	Labs Incld	57
Labs not Rcvd	1	2	3	3				

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	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

	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
227ANW	30.8 X	30.2 X	30.7 X	30.6 X	30.6	5.17 X	1.7	0.3	29.0	5.33 X	1.5	3.4 H	16	XX
3UP2XF	22.4	No Data	No Data	No Data	22.4	-0.67	1.6	0.0	23.2	-0.14	1.6	0.9	13	LY
3VQD4F	26.2	26.5 *	25.8	25.0	25.9	1.80	1.6	0.7	25.7	2.21 *	1.6	0.6	16	LH
47CKX3	25.4	24.4	24.9	24.8	24.8	1.07	1.8	0.4	23.9	0.44	1.7	0.9	16	LW
4887K3	22.9	23.4	23.5	22.9	23.2	-0.13	1.9	0.3	23.4	-0.01	1.7	0.4	16	LU
4CZABK	23.1	22.6	23.6	23.3	23.2	-0.15	1.9	0.5	23.0	-0.33	1.7	0.4	16	LY
4Z7TMJ	23.2	22.7	21.9	22.8 L	22.6	-0.52	1.3	0.5	23.1	-0.32	1.7	0.9	16	LA
63P9PK	24.4	23.9	24.2	24.5	24.2	0.61	2.0	0.3	23.9	0.48	1.8	0.5	16	LA
79Q4MP	22.4 H	23.1	22.0 H	No Data	22.5	-0.61	2.8	0.5	22.0	-1.28	1.9	1.0	15	LY
7QDFG6	25.5 H	25.1	24.7	25.1	25.1	1.24	1.9	0.3	24.2	0.78	1.7	0.8	16	LW
7U8B76	25.7	25.8 *	25.1	24.0	25.2	1.29	1.6	0.8	25.0	1.51	1.6	0.7	16	LH
8LDQD3	25.3	22.9 L	22.0	21.5	22.9	-0.31	1.4	1.7 H	22.7	-0.65	1.3	1.1	16	LA
8WC7HL	25.0 L	23.3 L	23.6 L	23.3 L	23.8	0.32	0.0	0.8	24.8	1.36	0.0	1.1	16	TT
97WWGJ	23.4	21.7 L	21.8	22.3	22.3	-0.76	1.6	0.8	22.5	-0.89	1.6	1.0	16	LA
9TR2XG	21.9	21.4	22.4	22.8	22.1	-0.90	1.4	0.6	22.5	-0.86	1.6	0.5	16	LW
B8J7C4	22.6	22.9	22.1 H	24.2 L	22.9	-0.31	1.7	0.9	23.1	-0.24	1.9	0.9	16	LA
BGKU62	23.0	22.9	23.0	22.8	22.9	-0.31	1.5	0.1 L	23.3	-0.10	1.6	0.2	16	LA
BJEQL8	25.0	25.3 H	25.7	27.1 X	25.8	1.74	2.4	0.9	24.8	1.37	1.9	1.0	16	LA
BL6P2R	23.3	23.3	22.8	22.5	23.0	-0.27	1.8	0.4	23.1	-0.28	1.6	0.6	16	LA
BUHJDM	23.7	24.1	24.8	23.1	23.9	0.40	1.8	0.7	23.2	-0.14	1.8	0.7	16	LY
D33KRN	23.4	22.1	22.9	23.1	22.9	-0.34	1.5	0.6	22.9	-0.50	1.5	0.5	16	LU
D4Y6EM	23.0	23.4	22.9	22.0 L	22.8	-0.39	1.3	0.6	22.9	-0.45	1.7	0.4	16	LA
DQL2W7	23.3	23.7	25.4	24.7 H	24.3	0.65	2.1	1.0	23.8	0.43	2.0	1.0	12	LH
DRK8AJ	23.5	24.0	23.7	24.6	23.9	0.40	1.7	0.5	24.0	0.58	1.6	0.4	16	LA
F6H3GB	22.0	23.2	22.8	23.2	22.8	-0.38	1.5	0.6	23.0	-0.41	1.5	0.5	16	LA
F9JY9Q	22.8	18.3 X	19.4 *	18.5 X	19.7	-2.60 *	1.7	2.1 H	21.4	-1.91	2.1	1.6 H	16	LZ
FGE63R	22.6 L	21.5	22.2 L	21.8	22.0	-0.95	1.1	0.5	21.9	-1.42	1.2	0.6	16	BK
H83P9N	23.2	23.1 H	23.2	23.1	23.1	-0.16	2.2	0.1 L	23.0	-0.36	1.9	0.7	16	LA
H8BX3G	23.4	23.1	22.9	23.3	23.2	-0.12	1.2	0.2	23.2	-0.15	1.2	0.3	16	TT
JL9A9Z	23.1	23.2	22.6	22.4	22.8	-0.38	1.7	0.4	22.9	-0.43	1.7	0.7	12	LA
JNHZT3	22.3	23.0	22.0	22.4	22.4	-0.70	1.4	0.4	21.9	-1.44	1.5	0.6	16	LY
K98WNM	22.0	22.4	21.9	22.4	22.2	-0.85	1.7	0.3	22.3	-1.07	1.8	0.3	16	LZ
KUHYGW	25.3	23.7	24.5	25.2	24.7	0.93	1.8	0.8	24.7	1.27	1.8	0.6	12	LU
LRA7Y4	22.6	22.3	22.7	21.8	22.3	-0.73	1.8	0.4	22.6	-0.76	1.6	0.5	16	LA
MMCZRQ	24.7 L	42.9 XH	25.6 L	24.6 H	29.5	4.37 X	2.5	9.0 H	31.4	7.56 X	2.6	8.9 H	15	LA

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F1

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
P73UPK	26.7 *	27.2 X	26.8 *	26.9 X	26.9	2.54 *	1.8	0.2	26.9	3.33 X	2.0	0.8	16	LA
PFBCF6	23.9	23.4	23.8	24.1	23.8	0.31	1.5	0.3	24.4	0.97	1.7	0.7	12	LA
PK696W	25.3	25.1	23.4	24.0	24.4	0.77	1.8	0.9	24.3	0.87	2.0	0.7	16	LU
PQ8H94	25.6	24.6	25.5	24.8	25.1	1.27	1.7	0.5	25.2	1.68	1.9	0.5	12	LU
PTDYFL	22.8	25.2 H	25.4	22.2	23.9	0.39	2.0	1.6 H	24.7	1.28	1.8	1.1	16	LZ
PYEBBH	23.0	23.4	23.1	23.1 L	23.1	-0.16	1.2	0.2	23.4	0.05	1.2	0.3	16	TT
Q8RR9B	25.6	24.6	25.5	24.8	25.1	1.27	1.7	0.5	25.2	1.68	1.9	0.5	12	XX
R7FBTC	24.4	23.1	28.7 X	24.2	25.1	1.24	2.1	2.5 H	23.6	0.24	1.8	1.9 H	15	LA
T9D8MB	20.2 *	21.2	20.8	21.7	21.0	-1.71	1.8	0.6	21.0	-2.22 *	1.7	0.5	12	LH
TJWKYD	21.9	23.0	22.6	22.8	22.6	-0.57	2.0	0.5	22.9	-0.47	1.9	0.4	16	LW
V9MZKB	22.9	23.0	No Data	No Data	22.9	-0.30	1.6	0.1	22.9	-0.49	1.5	0.5	8	LY
VQT49M	23.3	24.1	23.1	24.2	23.7	0.23	1.8	0.6	23.7	0.34	1.8	0.6	16	LW
WCZ4R4	24.5	24.1	25.0	25.4	24.7	0.99	1.5	0.6	24.9	1.40	1.8	0.4	12	LU
WH4ZLC	23.8	23.1	23.9	23.4	23.6	0.14	1.8	0.4	23.8	0.37	1.7	0.4	16	LY
XNURBK	21.1	22.4	21.4	22.6 H	21.9	-1.07	2.0	0.7	23.1	-0.29	2.1	1.4	16	XX
XVDY4B	24.6	23.1 H	24.1	24.6	24.1	0.53	2.1	0.7	24.2	0.80	1.8	0.6	16	BK
YN4YA8	23.8	21.9	22.8	22.9	22.8	-0.37	1.7	0.8	21.8	-1.53	1.5	0.9	16	LH
ZFQNWX	22.2	21.1	23.6	22.2	22.3	-0.79	1.6	1.0	22.4	-0.96	1.6	0.7	16	LZ
ZMAR4Z	20.2 *	20.6 *	19.5 *H	18.6 X	19.7	-2.61 *	2.1	0.8	19.8	-3.42 X	1.6	0.9	16	LH

Consensus (All Labs) Results

Wk Mean	23.53	23.28	23.38	23.40	Month Mean	23.36	Grand Mean	23.39
Avg SDr	1.71	1.74	1.80	1.79	Avg SD	1.77	Avg SD	1.70
SD btwn Labs	1.43	1.23	1.58	1.09	SD btwn Labs	1.39	SD btwn Labs	1.06
Labs Incld	53	49	50	46	SD btwn Wks	0.80	SD btwn Wks	0.78
Labs Excld	1	4	2	5	Labs Incld	52	Labs Incld	50
Labs not Rcvd	0	1	2	3				

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		

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
227ANW	28.5 X	28.4 X	27.2 X	29.1 X	28.3	4.87 X	1.8	0.8	28.0	5.41 X	2.3	3.4 H	12	XX
3UP2XF	21.1	No Data	No Data	No Data	21.1	-0.92	1.4	0.0	22.2	-0.22	1.6	1.2	9	LY
3VQD4F	26.0 X	26.2 X	24.9 *	24.5	25.4	2.53 *	1.5	0.8	25.0	2.51 *	1.6	1.0	12	LH
47CKX3	23.9	23.6	24.5 *	23.9	24.0	1.40	1.8	0.4	23.1	0.59	1.7	0.9	12	LW
4887K3	22.3	22.8	22.4	21.8	22.3	0.08	1.6	0.4	22.5	0.04	1.6	0.4	12	LU
4CZABK	22.0	22.1	21.9	22.9	22.2	0.01	1.8	0.4	22.6	0.12	1.7	0.7	12	LU
4Z7TMJ	22.3	23.5	21.0	21.9	22.2	-0.04	1.7	1.0	22.4	-0.11	1.6	1.2	12	LA
63P9PK	22.8	22.7	23.2	23.0	22.9	0.57	1.8	0.2	22.8	0.35	1.6	0.6	12	LA
79Q4MP	21.4 H	23.0 H	22.4 H	No Data	22.3	0.04	3.5	0.8	21.8	-0.62	2.3	1.3	11	LH
7QDFG6	23.9	24.3 *	23.8	24.4	24.1	1.50	1.7	0.3	23.6	1.14	1.7	0.6	12	LW
7U8B76	24.6 *	24.0	23.4	23.7	23.9	1.36	1.5	0.5	24.3	1.76	1.6	0.7	12	LH
8LDQD3	22.8	21.3 L	20.6 L	20.1	21.2	-0.80	1.3	1.2	20.9	-1.51	1.2	0.9	12	LA
8WC7HL	20.9 L	21.7 L	20.5 L	21.9 L	21.3	-0.76	0.0	0.7	22.9	0.38	0.0	1.4	12	LZ
97WWGJ	21.7	21.9	21.4 L	20.5	21.4	-0.68	1.9	0.6	21.2	-1.24	1.7	0.6	12	LA
9TR2XG	21.2	22.1	20.8	21.6 H	21.4	-0.63	2.2	0.6	22.0	-0.43	1.8	0.6	12	LW
B8J7C4	21.5 L	21.5	21.2 L	22.1	21.6	-0.51	1.1	0.4	22.0	-0.41	1.6	0.5	12	LA
BGKU62	22.5	22.3	22.4	22.2	22.4	0.12	1.5	0.1 L	22.4	-0.09	1.5	0.1 L	12	LA
BJEQL8	21.9	22.6	22.3	22.8	22.4	0.17	2.0	0.4	23.0	0.56	1.8	0.6	12	LA
BL6P2R	22.1	21.7	21.9	22.5 L	22.0	-0.13	1.5	0.4	21.8	-0.63	1.5	0.4	12	LA
BUHJDM	23.7	22.8	23.4	22.9	23.2	0.79	1.4	0.4	22.5	0.03	1.7	0.7	12	LY
D33KRN	21.3	21.6	21.4	22.8	21.8	-0.36	1.6	0.7	22.1	-0.39	1.5	0.7	12	LW
D4Y6EM	22.1	22.6	22.8	22.4	22.5	0.21	1.6	0.3	22.8	0.34	1.7	0.4	12	LU
DQL2W7	21.6	22.7	23.6	24.3	23.1	0.69	1.8	1.2	23.1	0.62	1.8	0.7	12	LH
DRK8AJ	23.1	23.8	23.9 L	24.0	23.7	1.18	1.5	0.4	23.8	1.26	1.6	0.3 L	8	LA
F6H3GB	21.9	22.4	21.9	22.0	22.1	-0.13	1.6	0.2	22.1	-0.36	1.6	0.4	12	LA
F9JY9Q	21.6	18.7 X	17.8 X	18.3 X	19.1	-2.49 *	1.7	1.7	20.7	-1.70	2.1	1.7	12	XX
FGE63R	20.0 *L	20.5	20.1	20.7	20.3	-1.50	1.1	0.3	20.6	-1.78	1.2	0.3 L	12	BK
H83P9N	21.9	22.8	23.4 H	22.6	22.7	0.38	2.6	0.6	22.5	0.03	2.0	0.5	12	LA
H8BX3G	22.1	22.2	22.0	22.1	22.1	-0.09	1.2	0.1 L	22.3	-0.20	1.2	0.4	12	TT
JL9A9Z	22.5	21.9	21.7	20.6	21.7	-0.43	1.5	0.8	22.1	-0.36	1.5	0.6	12	LA
JNHZT3	21.0	20.6	21.0	21.6	21.0	-0.93	1.5	0.4	21.0	-1.39	1.5	0.4	12	LY
K98WNM	21.8	20.8	21.8	21.2	21.4	-0.62	1.7	0.5	21.4	-1.01	1.6	0.7	12	LZ
KUHYGW	22.9	22.3	22.6	22.8 H	22.7	0.37	2.0	0.2	23.6	1.14	1.8	0.9	12	LU
LRA7Y4	21.9	21.6	22.6	21.7	21.9	-0.23	1.4	0.4	22.1	-0.37	1.5	0.4	12	LW
MMCZRQ	23.1	33.5 X	22.9	22.9	25.6	2.69 *	1.9	5.3 H	26.2	3.60 X	2.1	4.9 H	10	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
P73UPK	22.8	22.1	23.0	22.8	22.7	0.37	1.6	0.4	24.2	1.65	1.9	1.6	12	LA
PFBCF6	22.1	22.2	22.2	22.9	22.3	0.11	1.8	0.4	23.2	0.73	1.8	0.8	12	LA
PK696W	23.7	23.7	21.9	22.9	23.1	0.67	1.6	0.9	23.3	0.83	1.7	0.5	12	LU
PQ8H94	24.1 *	24.0	23.8	24.3	24.1	1.47	1.8	0.2	23.8	1.26	1.7	0.6	8	LU
PTDYFL	22.4	22.8	23.8	22.1	22.8	0.45	1.5	0.7	23.3	0.83	1.5	0.8	12	LZ
PYEBBH	21.6	21.8	22.2 L	21.8	21.8	-0.29	1.1	0.2	22.3	-0.12	1.1	0.4	12	TT
Q8RR9B	24.1 *	24.0	23.8	24.3	24.1	1.47	1.8	0.2	23.8	1.26	1.7	0.6	8	XX
R7FBTC	21.6	21.6	20.4	23.0	21.6	-0.45	1.6	1.0	23.9	1.36	1.7	6.8 H	11	LA
T9D8MB	20.1 *	20.4	19.7 *	20.9	20.3	-1.54	1.7	0.5	21.1	-1.37	1.8	0.7	12	LH
TJWKYD	21.3	21.1	21.7 H	21.4	21.3	-0.69	1.8	0.3	21.9	-0.59	1.7	0.5	12	LW
V9MZKB	21.8	20.8	No Data	No Data	21.3	-0.73	1.6	0.7	22.3	-0.16	1.5	0.9	8	LY
VQT49M	22.4	23.0	22.5	22.7	22.7	0.35	1.7	0.3	23.2	0.70	1.8	0.7	11	LW
WCZ4R4	22.5	23.1	22.7	21.7	22.5	0.22	1.6	0.6	22.9	0.40	1.7	0.6	8	LU
WH4ZLC	22.2	22.3	22.1	23.1	22.4	0.17	1.7	0.4	22.6	0.15	1.7	0.5	12	LY
XNURBK	21.9	22.0	21.9	22.6	22.1	-0.09	1.9	0.3	22.2	-0.22	1.8	1.3	12	XX
XVDY4B	21.3 L	21.3 L	20.7 L	19.8 *L	20.8	-1.14	0.3	0.7	22.3	-0.16	1.1	1.4	12	BK
YN4YA8	22.4	21.3	21.4	21.3	21.6	-0.49	1.5	0.5	21.3	-1.15	1.5	0.6	12	LH
ZFQNWX	21.7	22.0	21.1	21.6	21.6	-0.50	1.7	0.4	21.6	-0.84	1.7	0.5	12	LZ
ZMAR4Z	18.9 XH	20.2 *H	18.5 XH	20.1	19.4	-2.23 *	2.8	0.8	19.8	-2.58 *	2.0	1.0	12	LH

Consensus (All Labs) Results

Wk Mean	22.17	22.23	22.21	22.32	Month Mean	22.21	Grand Mean	22.47
Avg SDr	1.66	1.80	1.73	1.60	Avg SD	1.74	Avg SD	1.66
SD btwn Labs	0.98	1.02	1.18	1.18	SD btwn Labs	1.25	SD btwn Labs	1.03
Labs Incld	51	49	49	49	SD btwn Wks	0.95	SD btwn Wks	1.24
Labs Excld	3	4	3	2	Labs Incld	53	Labs Incld	52
Labs not Rcvd	0	1	2	3				

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
47CKX3	150.4	-0.08	11.95		150.4	-0.08	0.00	1	XX
4Z7TMJ	142.8	-0.34	11.67		142.8	-0.34	0.00	1	EV
79Q4MP	92.7	-2.07 *	7.69	L	92.7	-2.07 *	0.00	1	EV
97WWGJ	158.7	0.21	37.34	H	158.7	0.21	0.00	1	LA
BGKU62	151.9	-0.03	9.52	L	151.9	-0.03	0.00	1	XX
BJEQL8	135.5	-0.59	8.86	L	135.5	-0.59	0.00	1	LA
BL6P2R	127.8	-0.86	13.03		127.8	-0.86	0.00	1	XX
BUHJDM	157.1	0.15	12.24		157.1	0.15	0.00	1	EV
CW2XGN	163.3	0.37	53.72	H	163.3	0.37	0.00	1	EV
DQL2W7	132.5	-0.70	36.80	H	132.5	-0.70	0.00	1	EV
DRK8AJ	141.2	-0.40	28.07		141.2	-0.40	0.00	1	LA
EKWPPG	135.9	-0.58	17.70		135.9	-0.58	0.00	1	LS
F6H3GB	125.5	-0.94	15.39		125.5	-0.94	0.00	1	LS
JL9A9Z	162.3	0.33	12.13		162.3	0.33	0.00	1	EV
JNHZT3	149.1	-0.12	12.32		149.1	-0.12	0.00	1	EV
K98WNM	133.6	-0.66	8.96	L	133.6	-0.66	0.00	1	LA
LRA7Y4	138.3	-0.50	21.25		138.3	-0.50	0.00	1	LA
MMCZRQ	141.9	-0.37	15.44		141.9	-0.37	0.00	1	LA
P73UPK	163.3	0.37	13.09		163.3	0.37	0.00	1	EV
PFBCF6	219.6	2.31 *	27.88		219.6	2.31 *	0.00	1	LA
PK696W	158.4	0.20	14.01		158.4	0.20	0.00	1	EV
PQ8H94	215.6	2.17 *	8.33	L	215.6	2.17 *	0.00	1	EV
R7FBTC	137.9	-0.51	22.01		137.9	-0.51	0.00	1	LA
TJWKYD	132.6	-0.69	13.00		132.6	-0.69	0.00	1	EV
WCZ4R4	216.5	2.20 *	9.99		216.5	2.20 *	0.00	1	EV
XVDY4B	190.8	1.31	45.89	H	190.8	1.31	0.00	1	LA
YWZ24V	147.1	-0.19	18.14		147.1	-0.19	0.00	1	EV
ZFQNWX	243.1	3.11 X	30.29		243.1	3.11 X	0.00	1	LA

Consensus (All Labs) Results

Month Mean	152.68	Grand Mean	152.68
Avg SD	22.17	Avg SD Months	0.00
SD btwn Labs	29.02	SD btwn Labs	29.02
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 - 42F1

TAPPI Official Test Method T538

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV		SD	Mean	CPV		SD Months	Months	Inst
4887K3	361.4	0.63		8.59	360.9	0.76		1.86	4	XX
63P9PK	357.8	0.13		10.42	360.3	0.66		3.68	4	LA
ADAJER	394.0	5.22	X	5.27	394.0	6.31	X	0.00	1	TS
DQL2W7	360.1	0.45		7.09	356.8	0.07		5.86	3	LA
EKWPPG	356.6	-0.04		6.69	355.3	-0.18		1.20	4	XX
F6H3GB	352.2	-0.66		5.63	349.6	-1.13		2.04	4	LA
H83P9N	356.1	-0.11		5.28	357.2	0.14		1.67	4	LA
JL9A9Z	354.0	-0.41		5.21	352.6	-0.64		1.24	3	LA
PTDYFL	362.0	0.71		7.97	360.6	0.72		1.39	4	XX
U74GX8	343.3	-1.91	*	5.23	348.1	-1.39		4.76	4	XX
V9MZKB	371.1	2.00	*	7.02	368.1	1.96	*	4.31	2	PP
W7DE8U	351.3	-0.79		7.20	350.6	-0.97		2.75	4	LA

Consensus (All Labs) Results

Month Mean	356.90	Grand Mean	356.36
Avg SD	7.11	Avg SD Months	3.19
SD btwn Labs	7.11	SD btwn Labs	5.97
Labs Incld	11	Labs Incld	11

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 231

Internal Bond, 42 lb Linerboard - 42D

TAPPI Official Test Method T569

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4887K3	116.3	0.86	5.36		112.3	0.73	2.67	4	HY
4Z7TMJ	118.0	1.00	6.78		105.8	0.08	8.21	4	TM
63P9PK	48.3	-4.80 X	1.17	L	48.8	-5.58 X	0.37 L	4	LZ
69HPNW	119.3	1.10	6.43		110.8	0.58	8.90	4	SC
6W4A2W	93.2	-1.07	4.38		93.0	-1.19	12.62	4	TM
8LDQD3	105.8	-0.02	3.19		101.4	-0.36	3.29	4	TM
97WWGJ	117.4	0.95	7.30		117.2	1.21	5.16	4	SC
BL6P2R	103.0	-0.25	8.15		104.2	-0.08	5.16	4	TM
BUHJDM	105.0	-0.08	2.42		100.8	-0.42	6.55	4	XX
CW2XGN	109.2	0.26	9.04		119.2	1.41	7.51	4	HY
D4Y6EM	101.0	-0.42	6.20		100.9	-0.41	1.93	4	HZ
EKWPPG	109.8	0.31	9.76		106.3	0.13	2.62	4	XX
F6H3GB	103.0	-0.25	8.97		107.0	0.20	21.20 H	4	TM
F9JY9Q	85.5	-1.71	9.77		90.3	-1.46	20.04 H	4	SC
H83P9N	84.0	-1.83	2.95		90.6	-1.43	7.10	4	SC
LRA7Y4	122.4	1.36	11.35		119.1	1.40	5.16	4	HY
P73UPK	118.0	1.00	8.37		114.3	0.93	10.97	3	SC
PK696W	91.6	-1.20	7.89		93.4	-1.15	2.32	4	TM
PQ8H94	94.0	-1.00	7.84		91.1	-1.38	3.82	3	TM
V9MZKB	118.0	1.00	9.70		117.3	1.22	0.99	2	HY
WCZ4R4	63.0	-3.58 X	2.55		61.5	-4.32 X	1.41 L	3	TM

Consensus (All Labs) Results

Month Mean	106.02	Grand Mean	105.00
Avg SD	7.57	Avg SD Months	9.05
SD btwn Labs	12.03	SD btwn Labs	10.06
Labs Incld	19	Labs Incld	19

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	104.01	12.41	2.02	15
Modified Scott Bond Mechanics	119.36	4.30	13.34	2

Analysis Notes

63P9PK - 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
47CKX3	26.8	-0.17	3.56		26.8	-0.17	0.00	1
4887K3	28.2	0.24	2.53		28.2	0.24	0.00	1
4DCA7U	28.4	0.31	1.52		28.4	0.31	0.00	1
4Z7TMJ	31.6	1.27	4.83		31.6	1.27	0.00	1
63P9PK	25.1	-0.68	3.60		25.1	-0.68	0.00	1
69HPNW	31.6	1.27	5.22		31.6	1.27	0.00	1
97WWGJ	33.6	1.88	5.70		33.6	1.88	0.00	1
BGKU62	24.8	-0.78	0.84		24.8	-0.78	0.00	1
BL6P2R	25.4	-0.59	1.52		25.4	-0.59	0.00	1
BUHJDM	23.8	-1.08	3.70		23.8	-1.08	0.00	1
DQL2W7	27.6	0.07	3.21		27.6	0.07	0.00	1
DRK8AJ	28.3	0.29	3.94		28.3	0.29	0.00	1
F6H3GB	26.2	-0.35	1.96		26.2	-0.35	0.00	1
JL9A9Z	29.8	0.73	2.17		29.8	0.73	0.00	1
JNHZT3	24.2	-0.95	1.39		24.2	-0.95	0.00	1
K98WNM	22.6	-1.44	1.52		22.6	-1.44	0.00	1
KQX7BV	27.8	0.13	1.64		27.8	0.13	0.00	1
LRA7Y4	29.8	0.73	2.28		29.8	0.73	0.00	1
P73UPK	21.0	-1.92 *	0.71	L	21.0	-1.92 *	0.00	1
PK696W	31.6	1.27	4.39		31.6	1.27	0.00	1
PQ8H94	27.0	-0.11	6.56	H	27.0	-0.11	0.00	1
PRHFMK	31.6	1.27	5.27		31.6	1.27	0.00	1
PTDYFL	32.7	1.61	3.56		32.7	1.61	0.00	1
Q8RR9B	23.8	-1.08	5.63		23.8	-1.08	0.00	1
TJWKYD	22.2	-1.56	2.28		22.2	-1.56	0.00	1
V9MZKB	25.5	-0.56	0.87		25.5	-0.56	0.00	1
VQT49M	27.2	-0.05	1.92		27.2	-0.05	0.00	1
WCZ4R4	25.8	-0.47	1.92		25.8	-0.47	0.00	1
YN4YA8	29.7	0.70	2.99		29.7	0.70	0.00	1

Consensus (All Labs) Results

Month Mean	27.37	Grand Mean	27.37
Avg SD	3.41	Avg SD Months	0.00
SD btwn Labs	3.32	SD btwn Labs	3.32
Labs Incld	29	Labs Incld	29

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
4887K3	19.0	0.50	2.22		18.2	-0.41	0.86	4	TP
4Z7TMJ	18.1	-0.18	1.17		18.7	0.08	0.42	4	LP
63P9PK	20.8	1.82	0.62	L	20.3	1.75	0.53	4	LA
97WWGJ	17.7	-0.51	1.29		18.5	-0.08	0.73	4	LA
BGKU62	18.6	0.18	1.11		18.5	-0.11	0.21	4	LA
BJEQL8	17.2	-0.91	0.68		18.2	-0.41	0.80	4	LA
BL6P2R	19.9	1.20	1.11		20.2	1.65	0.37	4	LA
BUHJDM	19.3	0.72	0.63		23.8	5.20 X	11.38 H	4	LP
C73L9K	17.6	-0.54	0.79		18.6	-0.03	1.02	4	LP
DQL2W7	17.8	-0.41	1.99		18.0	-0.56	0.32	3	LP
EKWPPG	18.9	0.42	0.91		18.3	-0.33	0.56	4	LP
F6H3GB	18.1	-0.23	0.96		18.9	0.30	0.71	4	LA
FZ9M8L	18.3	-0.05	0.95		18.4	-0.22	0.22	4	XX
GUE8X6	16.9	-1.06	1.27		17.9	-0.67	1.01	4	LP
H83P9N	17.7	-0.48	0.70		18.8	0.19	0.97	4	LA
JL9A9Z	16.5	-1.42	2.19		17.2	-1.42	0.75	3	LA
K98WNM	18.3	-0.07	1.60		18.2	-0.42	0.23	4	LP
KQX7BV	18.0	-0.27	1.35		17.7	-0.89	1.18	4	LP
LRA7Y4	18.5	0.10	0.85		20.7	2.13 *	1.65	4	LP
MMCZRQ	16.5	-1.39	1.19		17.5	-1.07	1.20	4	LA
P73UPK	15.9	-1.86	1.45		16.7	-1.95 *	0.58	4	LA
PQ8H94	19.8	1.05	1.93		19.2	0.64	0.53	3	LA
PTDYFL	20.5	1.63	2.03		19.6	1.00	1.25	4	GA
Q8RR9B	18.5	0.11	0.48	L	17.9	-0.68	0.52	3	LA
RMKH9D	17.1	-0.95	3.21	H	17.9	-0.67	1.01	4	GG
TJWKYD	17.3	-0.83	1.51		18.3	-0.30	1.17	4	XX
V9MZKB	17.0	-1.03	0.82		18.1	-0.51	1.54	2	TP
VQT49M	17.5	-0.65	1.90		18.1	-0.52	0.91	4	LP
WCZ4R4	18.9	0.44	1.11		18.8	0.18	0.27	3	LA
WH4ZLC	19.8	1.09	0.79		19.6	1.01	0.22	4	LP
WU4EYV	21.1	2.06 *	1.67		20.9	2.30 *	0.25	4	GA
XVDY4B	20.4	1.52	0.86		22.3	3.75 X	1.37	4	LA

Consensus (All Labs) Results

Month Mean	18.36	Grand Mean	18.59
Avg SD	1.42	Avg SD Months	0.83
SD btwn Labs	1.33	SD btwn Labs	0.99
Labs Incld	32	Labs Incld	30

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
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
227ANW	62.2	61.1	60.6	59.3	60.8	1.17	3.2	1.2	61.9	1.76	3.0	3.0	16	TD
3UP2XF	60.7 L	No Data	No Data	No Data	60.7	1.15	1.6	0.0	57.9	0.11	3.5	1.9	13	LD
3VQD4F	54.5	55.5	53.5	53.4	54.2	-1.33	3.0	1.0	53.9	-1.55	3.2	1.6	16	LD
4887K3	61.3	59.9	58.2	56.6	59.0	0.49	3.6	2.1	59.6	0.80	3.9	1.9	16	LC
4CZABK	59.4	60.4	59.3	57.3	59.1	0.53	4.3	1.3	58.3	0.26	4.1	1.6	16	LD
4DNXE9	57.4	54.5	54.6	54.0	55.1	-0.98	2.8	1.5	55.9	-0.71	3.1	1.4	12	TH
63P9PK	51.9 *	53.2	52.0 *	52.3	52.3	-2.04 *	3.5	0.6	52.1	-2.29 *	3.7	1.2	16	LD
69HPNW	56.4	56.4	58.0	56.0	56.7	-0.39	4.2	0.9	56.0	-0.67	3.8	1.9	16	LZ
6AQKLG	58.2	57.5	57.9	57.1	57.7	-0.02	2.7	0.5	57.5	-0.06	3.2	0.4 L	16	LC
7QDFG6	62.5	62.9	58.6	61.2	61.3	1.36	2.6	2.0	59.5	0.75	2.9	1.9	16	LD
7U8B76	62.8	60.7	57.3	59.8	60.1	0.92	4.2	2.3	60.5	1.17	4.3	1.5	16	LD
8LDQD3	62.5	57.8	63.4 *	64.7 *	62.1	1.66	3.3	3.0	60.5	1.16	3.6	2.3	16	LC
8M8ERR	63.2	62.6 L	62.1	62.9	62.7	1.89	2.2	0.5	53.4	-1.75	2.2	12.4 H	16	TU
8V2JLT	60.3	60.7	60.6	60.6	60.5	1.07	3.8	0.2 L	60.5	1.18	3.1	0.2 L	16	LD
8WC7HL	53.3	48.9 X	51.7 *	52.2	51.5	-2.35 *	3.4	1.9	53.9	-1.55	3.9	2.0	16	EM
9DWC7Q	58.3	58.3	59.7	57.3	58.4	0.26	2.3	1.0	59.8	0.90	3.9	2.2	16	MB
A3W46Z	54.2	60.0	60.0	60.3	58.6	0.35	3.1	2.9	57.4	-0.10	3.1	2.4	8	LD
BFW82D	59.4	59.4	60.0	59.9	59.7	0.74	2.4	0.3	58.7	0.43	3.1	0.9	16	EM
BGKU62	58.9	58.2	58.5	58.4	58.5	0.30	2.2	0.3	58.3	0.27	2.0	0.4 L	16	LD
BL6P2R	54.2	56.4	59.5	59.3	57.3	-0.14	3.9	2.5	57.6	-0.04	3.8	1.8	16	LD
BUHJDM	59.2	58.9	59.5	60.6	59.5	0.70	3.7	0.8	58.7	0.45	4.1	1.3	16	LZ
C73L9K	57.1	58.6	55.1	55.4	56.5	-0.44	3.1	1.6	57.8	0.08	3.5	1.7	16	LD
D33KRN	58.9	60.5	59.7	57.3	59.1	0.52	3.6	1.3	57.5	-0.07	3.5	1.5	16	LZ
D4Y6EM	56.6	51.7 *	59.4	57.5	56.3	-0.53	4.2	3.3 H	55.6	-0.86	3.6	1.8	16	LC
EFG7FL	57.7	59.0	59.1 H	59.1	58.7	0.39	3.8	0.7	58.9	0.53	3.7	3.1	12	LD
EKWPPG	No Data	No Data	No Data	55.4	55.4	-0.90	1.6	0.0	55.5	-0.88	2.6	0.2	2	XX
F9JY9Q	54.8	57.4	56.6	57.6	56.6	-0.43	3.1	1.3	55.8	-0.78	3.2	2.5	16	LC
FTPJZJ	58.6 H	55.1	57.4 H	57.8	57.2	-0.19	5.6	1.5	63.6	2.45 *	4.4	4.1	16	LC
GUE8X6	58.7	59.2	57.1	58.1	58.3	0.22	3.7	0.9	58.1	0.20	3.6	1.5	16	LD
H8BX3G	60.1	58.9	57.4	59.3	58.9	0.46	3.9	1.1	59.0	0.57	3.8	1.3	16	TJ
HXBB6H	64.1 *H	59.6	61.4	63.3 *	62.1	1.67	4.9	2.0	61.4	1.53	5.0	2.1	12	LC
JL9A9Z	57.0	58.6	61.4	54.9	58.0	0.10	4.4	2.7	59.0	0.56	4.4	2.3	12	LD
JNHZT3	56.0	57.5	57.6	56.9	57.0	-0.28	2.5	0.7	56.7	-0.39	3.2	1.1	16	EN
K98WNM	57.4	57.5	55.1	58.9	57.2	-0.18	3.9	1.6	57.7	0.03	3.8	2.5	16	LZ
KKHCNZ	57.3	58.0	57.1	56.8	57.3	-0.16	3.2	0.5	57.7	0.02	3.2	0.5 L	16	LD

Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T809

Report #599 (J)
August 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
LRA7Y4	55.8	56.5	57.3	56.8	56.6	-0.42	3.9	0.7	55.7	-0.81	3.6	1.4	16	LD
MMCZRQ	54.7 H	22.5 X	49.5 X	55.3	45.5	-4.63 X	4.8	15.5 H	46.3	-4.68 X	6.5	10.4 H	15	MB
PK696W	54.6	53.9	54.1	54.3	54.2	-1.33	3.4	0.3	55.9	-0.74	3.5	1.5	13	LD
PQ8H94	54.1	53.2	55.2	51.9	53.6	-1.56	4.3	1.4	55.4	-0.93	3.9	2.4	12	LC
PTDYFL	56.6	55.2	57.3 L	58.4	56.9	-0.32	2.9	1.3	56.8	-0.35	3.1	1.5	16	LZ
PYEBBH	57.1	58.5	58.5	58.3	58.1	0.14	4.6	0.7	58.0	0.15	4.6	0.7	16	TG
R7FBTC	55.5	56.8	54.9	52.4	54.9	-1.07	3.1	1.9	54.3	-1.37	3.7	3.3	15	MB
T9D8MB	57.0	56.3	57.2	56.6	56.8	-0.36	3.2	0.4	57.2	-0.18	2.9	0.6 L	12	TH
UEHC32	57.7 L	57.7 L	58.0 L	57.7 L	57.8	0.02	1.3	0.1 L	58.1	0.18	1.3	0.3 L	16	LD
V6MT2X	44.0 X	47.8 X	44.8 XH	47.3 X	46.0	-4.45 X	4.6	1.9	45.4	-5.04 X	4.4	5.2 H	16	TC
V9MZKB	57.2	54.3	No Data	No Data	55.8	-0.75	4.8	2.1	57.4	-0.12	4.4	1.3	8	LD
VQT49M	61.6	61.2	62.3	60.8	61.5	1.42	2.9	0.7	61.1	1.40	3.2	0.8	16	LD
WCZ4R4	54.1	53.2	55.2	51.9	53.6	-1.56	4.3	1.4	55.5	-0.90	3.7	2.5	11	XX
XNURBK	62.3 H	63.6 *	63.5 *	60.7	62.5	1.82	4.6	1.4	61.7	1.68	4.4	2.2	16	LD
XVDY4B	57.2	50.6 *H	53.3	55.8	54.2	-1.33	8.0	2.9	54.0	-1.50	6.2	2.7	16	MB
YH7CC6	60.4	58.6	59.1	57.9	59.0	0.49	4.2	1.1	59.3	0.68	4.3	1.3	16	LC
YN4YA8	55.1	55.5	55.2	56.2	55.5	-0.84	3.2	0.5	55.0	-1.08	3.1	1.2	16	LD
YQRPYH	60.7 L	60.0 L	60.3	60.3 L	60.3	0.99	1.7	0.3	60.4	1.14	2.5	0.4 L	16	LD
ZFQNWX	54.4 L	56.2	56.3	54.4	55.3	-0.91	3.1	1.1	55.8	-0.75	3.8	1.7	16	LD

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4				
Wk Mean	57.91	57.70	57.90	57.47	Month Mean	57.72	Grand Mean	57.65
Avg SDr	3.73	4.10	3.64	3.30	Avg SD	3.65	Avg SD	3.64
SD btwn Labs	2.93	2.86	2.76	2.95	SD btwn Labs	2.63	SD btwn Labs	2.42
Labs Incld	52	49	49	51	SD btwn Wks	1.52	SD btwn Wks	2.50
Labs Excld	1	3	2	1	Labs Incld	52	Labs Incld	52
Labs not Rcvd	1	2	3	2				

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

Report #599 (J)
August 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
227ANW	68.4	67.3 H	66.5 H	63.7 H	66.5	-0.82	5.7	2.0	68.3	-0.13	3.5	2.5	16	TD
4887K3	67.2	72.9	69.9	71.7	70.4	0.83	3.5	2.5	70.4	0.81	3.3	1.5	16	LC
63P9PK	69.2	64.0	66.4	65.9 H	66.4	-0.87	4.0	2.2	68.7	0.05	4.0	2.2	16	LD
6AQKLG	68.1	68.6	68.8	67.9	68.4	-0.04	3.1	0.4	68.0	-0.26	3.6	0.5	16	LD
7QDFG6	68.5	68.4 L	69.7	68.4	68.7	0.12	1.8	0.7	67.1	-0.63	2.2	1.5	16	LD
9DWC7Q	66.9	66.2	65.5	66.3	66.2	-0.93	2.6	0.6	65.2	-1.48	2.4	1.7	16	MB
BGKU62	68.5	68.5	68.9	68.5	68.6	0.07	1.8	0.2 L	69.0	0.19	2.1	0.4 L	16	LD
BL6P2R	65.1	61.0 *	63.6 *	61.0 *	62.7	-2.42 *	3.5	2.0	63.2	-2.34 *	3.9	1.7	16	LD
C73L9K	64.5	68.0	68.6	66.4	66.9	-0.65	2.9	1.9	67.0	-0.68	3.3	1.2	16	LD
D33KRN	70.2	73.8	70.9	71.4	71.6	1.32	2.9	1.6	69.4	0.34	3.1	2.0	16	LZ
FGE63R	66.9	65.9	67.7	65.0	66.4	-0.87	3.5	1.2	66.7	-0.83	4.0	1.4	16	LD
FZ9M8L	68.3	68.0	67.9	67.8	68.0	-0.18	1.7	0.2 L	67.7	-0.37	1.9	0.9	16	LZ
GUE8X6	73.8 *	69.9	70.1	68.8	70.6	0.93	3.0	2.2	70.7	0.93	3.7	1.9	16	LD
K98WNM	66.1	67.9	69.0	70.1	68.3	-0.06	3.6	1.7	68.2	-0.17	4.5	1.8	16	LZ
LRA7Y4	72.2	74.4	72.8 *	72.3	72.9	1.90 *	3.1	1.0	73.2	2.02 *	3.3	1.5	16	LD
PQ8H94	69.8	68.4	66.3	67.7	68.1	-0.16	3.7	1.5	72.0	1.49	4.2	3.6 H	12	XX
UEHC32	68.7	68.6	68.7	68.6	68.6	0.08	1.5	0.1 L	68.6	0.00	1.4	0.5	16	LD
V9MZKB	69.8	70.0	No Data	No Data	69.9	0.63	3.2	0.1	69.5	0.40	3.6	0.8	7	LD
VQT49M	71.8	70.0	70.4	72.3	71.1	1.13	3.7	1.1	70.1	0.65	3.8	1.6	16	LD

Consensus (All Labs) Results

Wk Mean	68.62	68.51	68.43	67.99	Month Mean	68.43	Grand Mean	68.57
Avg SDr	2.96	3.45	3.39	3.15	Avg SD	3.24	Avg SD	3.36
SD btwn Labs	2.36	3.17	2.19	3.00	SD btwn Labs	2.37	SD btwn Labs	2.28
Labs Incld	19	19	18	18	SD btwn Wks	1.44	SD btwn Wks	1.71
Labs Excld	0	0	0	0	Labs Incld	19	Labs Incld	19
Labs not Rcvd	0	0	1	1				

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - 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
4887K3	46.1	43.7	44.1	42.7	44.2	0.65	3.2	1.4	43.6	0.67	3.0	1.2	16	LC
4DNXE9	34.2	34.7 *	36.6	35.6	35.3	-1.95 *	2.0	1.1	35.3	-2.15 *	2.3	1.1	12	TH
63P9PK	42.6	43.8	44.6	42.4	43.3	0.41	2.6	1.0	42.3	0.22	2.8	1.7	16	LD
8M8ERR	41.2 L	41.2 L	40.4	39.3	40.5	-0.41	2.2	0.9	36.1	-1.87	2.2	3.4	16	TU
8V2JLT	45.1	45.5	45.7	45.3	45.4	1.01	3.1	0.2 L	45.5	1.28	2.9	0.2 L	16	LD
8WC7HL	37.1	36.6	37.0	35.9	36.6	-1.55	3.3	0.6	39.4	-0.76	3.2	1.9	16	EM
9DWC7Q	39.9	41.9	39.3	40.9	40.5	-0.42	1.9	1.1	39.2	-0.83	2.3	1.4	16	MB
A3W46Z	47.6	47.7 *	42.6	45.7	45.9	1.16	3.8	2.4	45.8	1.39	3.7	2.0	8	LZ
B8J7C4	42.5	38.3	41.0	42.2	41.0	-0.27	2.7	1.9	42.6	0.33	3.0	1.9	12	LZ
BFW82D	40.5	41.0	41.6	41.7	41.2	-0.21	2.1	0.6	42.2	0.19	1.9	1.1	16	LC
BGKU62	41.2	40.8	40.7 L	41.0	40.9	-0.29	1.7	0.2 L	41.8	0.03	2.5	0.6 L	16	LD
BMB87N	42.7	42.9	43.0	41.6	42.5	0.17	4.5	0.6	43.7	0.70	4.8	1.3	16	XX
C73L9K	42.6	40.4	39.3	43.1	41.4	-0.17	3.1	1.8	41.7	0.00	3.3	1.0	16	LD
D4Y6EM	43.2	42.6	45.9	44.5	44.1	0.63	2.4	1.5	43.1	0.50	3.0	1.3	16	LD
DQPKVU	43.9	46.5	44.6	44.6	44.9	0.86	2.7	1.1	43.9	0.77	2.9	1.7	16	LD
FTPJZJ	31.2 *	29.6 X	27.8 X	28.8 X	29.4	-3.68 X	2.8	1.4	32.3	-3.16 X	2.9	1.9	16	XX
GUE8X6	43.5	43.1	44.2	44.4	43.8	0.55	2.6	0.6	43.1	0.48	2.8	1.6	16	LD
HXBB6H	46.8	41.2	43.1	38.5	42.4	0.13	4.4	3.5	42.1	0.15	4.1	3.0	12	LC
MMCZRQ	42.6	63.1 X	39.7	49.8 *	48.8	2.01 *	3.6	10.4 H	42.7	0.37	4.0	8.3 H	15	MB
PFLD24	33.0 *H	34.9 *H	32.5 *H	34.5 *H	33.7	-2.40 *	6.5	1.1	35.5	-2.06 *	6.6	2.8	16	TX
PTDYFL	42.7	42.4	43.7	45.1	43.5	0.45	2.3	1.2	43.3	0.55	2.9	1.8	16	LD
PWE428	41.9 L	43.2	45.7	42.7	43.4	0.42	2.7	1.6	43.6	0.66	2.2	0.9	16	TH
TWKN7K	45.6	39.7	45.4	41.2	43.0	0.31	3.5	3.0	42.1	0.17	3.1	2.1	16	LZ
V6MT2X	34.7 H	36.2 H	35.2	36.2 H	35.6	-1.86	6.1	0.7	35.4	-2.09 *	5.7	1.4	16	TC
V9MZKB	44.8	44.2	No Data	No Data	44.5	0.75	3.8	0.4	44.3	0.89	3.7	1.1	7	LD
VQT49M	22.2 X	22.3 XL	22.6 X	22.6 XL	22.4	-5.72 X	1.5	0.2 L	22.4	-6.49 X	1.5	0.2 L	4	LC
YH7CC6	40.5	42.4	45.6	47.3	43.9	0.59	3.6	3.1	43.2	0.52	4.1	2.4	16	LC
YQRPYH	41.0 L	41.0	41.5	41.1	41.1	-0.23	2.5	0.2 L	42.5	0.27	2.6	1.0	16	LD
ZFQNWX	42.4	41.0	38.6	41.2	40.8	-0.33	3.6	1.6	40.5	-0.37	3.4	1.6	16	LD

Consensus (All Labs) Results

Wk Mean	41.46	41.41	41.60	41.87	Month Mean	41.93	Grand Mean	41.65
Avg SDr	3.58	3.64	3.26	3.05	Avg SD	3.40	Avg SD	3.47
SD btwn Labs	4.08	3.26	3.56	3.66	SD btwn Labs	3.42	SD btwn Labs	2.97
Labs Incld	28	26	26	26	SD btwn Wks	2.52	SD btwn Wks	2.34
Labs Excld	1	3	2	2	Labs Incld	27	Labs Incld	27
Labs not Rcvd	0	0	1	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	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

Containerboard Interlaboratory Testing Program
Analysis 261
STFI, 26 lb Corrugating Medium - CM11
TAPPI Official Test Method T826

Report #599 (J)
August 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
227ANW	17.6 X	18.1 X	18.0 X	18.4 XH	18.0	12.83 X	1.6	0.3	17.2	12.23 X	1.3	2.6 H	16	XX
4887K3	13.1	13.4	13.7	13.6	13.4	0.11	1.1	0.3	13.7	1.12	1.0	0.3	16	LU
63P9PK	14.0 H	13.6	13.5 H	13.2	13.6	0.47	1.1	0.3	13.6	0.83	1.1	0.4	16	LA
6AQKLG	13.2	12.9	13.7	12.6	13.1	-0.85	0.8	0.5	13.3	-0.18	0.8	0.5	16	LB
B8J7C4	12.8	12.2 L	13.6	13.3	13.0	-1.18	0.9	0.6	13.2	-0.40	1.1	0.6	16	LA
BFW82D	13.8	12.8 H	13.3	12.8	13.2	-0.61	1.2	0.5	12.9	-1.37	1.0	0.5	16	LB
BGKU62	13.2	13.2	13.3	13.3	13.2	-0.41	0.9	0.0 L	13.2	-0.36	0.8	0.1 L	16	LB
BL6P2R	14.4	13.6	13.1	13.6	13.7	0.80	0.9	0.5	13.3	-0.12	1.0	0.4	16	LA
BUHJDM	14.3	13.6	13.5	13.8	13.8	1.10	1.0	0.4	13.7	1.00	1.0	0.4	16	LB
F6H3GB	13.8 L	13.3	13.8	13.3	13.5	0.36	0.8	0.3	13.6	0.67	1.0	0.3	16	LA
H8BX3G	13.6	13.7	13.4	14.2	13.7	0.88	0.9	0.3	13.7	1.16	0.9	0.5	16	TT
JL9A9Z	14.0	14.2	13.0	13.2	13.6	0.53	1.2	0.6	13.3	-0.10	1.1	0.5	12	LA
KKHCNZ	13.6	12.9	13.1	14.0	13.4	0.00	0.8	0.5	13.4	0.30	0.8	0.4	16	LB
MMCZRQ	14.6 H	23.1 XH	13.8	14.7 *	16.6	8.78 X	1.5	4.4 H	16.4	9.84 X	1.3	3.4 H	14	LA
PFLD24	12.2 *	12.6	11.9 X	12.2 *	12.2	-3.22 X	1.1	0.3	12.3	-3.37 X	1.0	0.2	16	TT
PK696W	14.1 H	13.9	14.0	14.1	14.0	1.77	1.2	0.1	14.0	1.99 *	1.2	0.3	16	LU
PTDYFL	14.0	14.1 H	13.9	13.2	13.8	1.12	1.1	0.4	13.8	1.38	1.0	0.4	16	LZ
R7FBTC	24.4 XH	23.1 XH	28.7 XH	13.5	22.4	25.04 X	1.9	6.4 H	18.0	14.87 X	1.3	10.7 H	15	LA
T9D8MB	13.1 L	13.3	13.0 L	13.6	13.3	-0.40	0.8	0.3	13.1	-0.91	0.8	0.2	12	LH
TWKN7K	12.3	12.8	13.9	13.4	13.1	-0.77	1.1	0.7	13.1	-0.91	1.2	0.4	16	LA
UEHC32	13.5 L	13.7 L	13.5 L	13.6 L	13.6	0.47	0.5	0.1	13.4	0.14	0.5	0.2	16	LA
V6MT2X	12.6	12.5	12.8 *	12.2 *	12.6	-2.31 *	1.1	0.2	12.8	-1.81	1.1	0.3	16	TS
V9MZKB	14.0	13.3	No Data	No Data	13.7	0.82	1.0	0.5	13.5	0.35	1.2	0.3	8	LB
XVDY4B	13.0 L	12.5 L	12.4 XL	13.0 L	12.7	-1.86	0.1	0.3	13.2	-0.41	0.7	0.5	16	BK
YN4YA8	14.3 H	12.8	13.4	13.5	13.5	0.35	1.3	0.6	12.9	-1.34	1.1	0.5	16	LH
ZFQNWX	12.7	12.9	13.3	14.0	13.3	-0.40	1.0	0.6	13.0	-1.03	1.0	0.4	16	LZ

Consensus (All Labs) Results

Wk Mean	13.52	13.21	13.45	13.41	Month Mean	13.40	Grand Mean	13.35
Avg SDr	0.91	1.07	0.98	1.04	Avg SD	0.98	Avg SD	0.98
SD btwn Labs	0.68	0.53	0.32	0.59	SD btwn Labs	0.36	SD btwn Labs	0.31
Labs Incld	24	23	21	24	SD btwn Wks	0.43	SD btwn Wks	0.41
Labs Excld	2	3	4	1	Labs Incld	22	Labs Incld	22
Labs not Rcvd	0	0	1	1				

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)	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