Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #596 (E) - May 2019

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX13	Box Compression Strength, Corrugated Boxes
202	EC11	Edgewise Compressive Strength, Wax (T811), Corrugated Board
203	EC11	Edgewise Compressive Strength by Clamp (T839), Corrugated Board
205	42F1	Mullen Burst of Linerboard, 42 lb Linerboard
206	56A2	Mullen Burst of Linerboard, 56 lb Linerboard
215	42F1	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
216	56A2	Ring Crush of Linerboard, Rigid Platen Type, 56 lb Linerboard
223	42F1	STFI of Linerboard, 42 lb Linerboard
224	56A2	STFI of Linerboard, 56 lb Linerboard
228	56A	Roughness - Stylus Method, 56 lb Linerboard
229	42F1	Roughness - Sheffield Method, 42 lb Linerboard
231	42D	Internal Bond Strength, Linerboard, 42 lb Linerboard
234	56A	Coefficient of Static Friction - Inclined Plane, 56 lb Linerboard
237	42D	Air Resistance - Gurley Method, Linerboard, 42 lb Linerboard
240	CM11	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM11	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM11	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM11	STFI of Medium, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

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

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

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

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

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

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM11	April 2019-Current
	CM92	January 2018-March 2019
35 lb Linerboard	35E1	June 2017-Current
42 lb Linerboard	42F1	January 2019-Current
	42D3	November 2017-December 2018
56 lb Linerboard	56A2	January 2018-Current
	56A1	July 2016-November 2017

ABOUT CTS

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

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EXPLANATION OF TABLES

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

Definitions of Terms Used

Weekly Results

Laboratory Data

WebCode - A six character laboratory identifier used to maintain information on a confidential basis. The WebCode is unique for each cycle and will change for each report. Your WebCode can be found in your Individual Report (Current Month Performance Report) and your datasheet.

Weekly Means - The average of the test results obtained by the participant for each week that data were reported.

Consensus Data

Wk Mean - For each week, the average of the Means for all the participants, excluding those laboratories flagged with an 'X'.

Avg SD - For each week, the average of the within-laboratory standard deviations (SD's) for all the participants, excluding those laboratories flagged with an 'X'. The Avg SD is an indication of the variation of measurements within an average laboratory.

SD btwn Labs - For each week, the standard deviation of the laboratory Means about the Wk Mean, excluding those laboratories flagged with an 'X'. The SD LABS is an indication of the precision of measurement between the laboratories.

Labs Incld - The number of laboratory Means included in the Wk Mean for that week.

Labs Excld - The number of laboratory Means reported but excluded from the Wk Mean for that week because of outlying results ('X' following Mean).

Labs not rcvd - The number of laboratories failing to report for that week.

Monthly Results

Laboratory Data

Mean - For each laboratory, the average of all the weekly Means reported for this month.

CPV - Comparative Performance Value, an indication of how well a laboratory's Mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean). The closer a laboratory's CPV is to zero, the more consistent its results are with the other participants' data.

SD - For each laboratory, the average of the weekly within-lab standard deviations (SD's) for all reported Weekly Means this month.

SD Wk - The standard deviation among the laboratory's weekly Means, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.

Consensus Data

Month Mean - The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for this month.

Avg SD - For the current month, the average of the within-laboratory standard deviations (SD's) for all the participants, excluding those laboratories flagged with an 'X'.

SD btwn Labs - For the current month, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.

SD btwn Group - For the current month, the standard deviation of the laboratory Means within the group about the Month Mean, excluding those laboratories flagged with an 'X'.

SD btwn Wks - For the current month, the average of the laboratory between week standard deviations (SD Wks') for all the participants, excluding those laboratories flagged with an 'X'.

Cumulative Results

Laboratory Data

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

Consensus Data

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

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

Flag	Explanation

Data Flags " X " and " * " indicate a laboratory's performance on an average value differed from the consensus.
Data Flags " H " and " L " indicate a laboratory's performance on a standard deviation differed from the consensus.

Flags assigned to Weekly Means, Monthly Mean and Cumulative Mean:

X	Excluded from the weekly means, monthly means and/or the cumulative mean. Immediate review of data and/or testing procedure is recommended.
*	Included in the weekly means, monthly means and/or the cumulative mean; however, lab should review testing procedure and monitor future results.

Flags assigned to Weekly Means:

H	Indicates high within-laboratory standard deviation. The laboratory SD for each week is not shown, but laboratory average SD and consensus average SD values are shown.
L	Indicates low within-laboratory standard deviation. The laboratory SD for each week is not shown, but laboratory monthly average SD and consensus average SD values are shown.

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

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

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
36L37U	794.5	-1.16	59.20	849.4	-0.45	38.56	4	ER
3UH8PA	873.2	0.05	16.51	877.2	0.11	7.51	4	ET
3W6QQ8	938.2	1.05	29.31	899.7	0.57	54.38	2	LL
4RQ99Q	816.0	-0.83	35.64	838.7	-0.67	24.58	3	EX
6B46A2	932.1	0.96	59.01	890.0	0.37	39.77	3	LS
B34ZGX	866.1	-0.06	84.09	861.4	-0.21	54.36	4	ET
BEZ3ZU	890.1	0.31	25.19	904.7	0.67	16.33	4	LM
CHCBHQ	762.8	-1.65	61.95	880.3	0.18	102.76 H	3	TB
CMAVNV	816.6	-0.82	49.95	830.9	-0.83	28.38	4	LS
CWEMDP	740.4	-2.00 *	31.95	745.8	-2.56 *	19.15	4	LS
E7V7NY	919.1	0.76	26.33	864.1	-0.15	40.91	4	LG
E874YV	861.2	-0.13	59.13	875.3	0.07	44.08	4	ER
H3KHFY	932.6	0.97	34.14	955.8	1.71	17.53	4	ER
JJMKVH	892.5	0.35	32.72	867.2	-0.09	28.47	4	ER
K4KGKN	916.6	0.72	24.91	929.8	1.18	16.43	4	TE
M36WTQ	916.0	0.71	54.28	891.1	0.40	24.70	3	EX
M4ZBKP	854.4	-0.24	66.38	849.1	-0.46	14.73	4	LL
NHTA4C	820.4	-0.76	38.67	858.3	-0.27	48.96	3	EX
PH8FF8	824.9	-0.69	95.86	870.3	-0.03	40.62	4	LM
RP2ZYD	882.2	0.19	61.08	884.3	0.26	20.88	4	LG
UC7NGK	939.8	1.08	36.58	880.1	0.17	52.03	4	LG
UPAVDG	790.3	-1.23	75.84	770.6	-2.05 *	32.74	4	LS
VBTHEF	906.1	0.56	35.59	886.8	0.31	40.33	4	LS
W2XPU3	794.7	-1.16	13.26	795.0	-1.56	0.41	2	LS
W4QNZE	842.2	-0.43	67.53	880.9	0.19	36.58	4	ES
WN7BD8	997.7	1.97 *	37.21	975.2	2.11 *	21.53	4	LG
WYT96C	965.6	1.48	71.27	921.1	1.01	80.99	4	LS

Consensus (All Labs) Results

Month Mean	869.86	Grand Mean	871.59
Avg SD	51.93	Avg SD Months	41.15
SD btwn Labs	64.82	SD btwn Labs	49.19
Labs Incld	27	Labs Incld	27

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	870.30	85.29	0.45	10
Clip sealing	869.59	52.30	0.26	17

Key to Instrument Codes Reported by Participants

ER	Emerson 6200 Series	ES	Emerson 8510
ET	Emerson 7200	EX	Emerson Apparatus (Model not specified)
LG	TLS / L.A.B. Validator Series	LL	Lansmont 76-5K
LM	Lansmont 122-15k	LS	Lansmont Squeezer
TB	TMI Monitor/Compression Tester, Model 17-70	TE	Testometric M500 - 25 KN

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2WUFJ4	40.1	-0.35	2.01		41.3	0.15	2.47	4	LD
3W6QQ8	90.0	17.36 X	2.54		91.0	17.91 X	1.42	2	XX
69VYNZ	42.6	0.52	1.68		43.8	1.05	1.53	4	LC
9H3468	37.1	-1.42	0.74	L	38.9	-0.68	1.32	4	TF
CMAVNV	42.8	0.61	1.80		38.9	-0.70	3.76	4	LD
CWEMDP	44.3	1.15	1.43		43.1	0.83	0.88	4	LC
JJMKVH	39.1	-0.72	5.07	H	37.9	-1.05	0.86	4	EN
M36WTQ	41.1	-0.01	1.68		40.9	0.04	0.54	4	LC
PNU7ZG	35.7	-1.93 *	1.49		35.8	-1.80	1.65	4	TX
RP2ZYD	43.3	0.78	3.19		43.7	1.03	0.48	4	LE
RTZEKH	42.3	0.43	2.71		40.2	-0.21	3.09	4	XX
UC7NGK	43.7	0.93	0.95	L	44.6	1.35	0.98	4	TH
UPAVDG	30.0	-3.95 X	3.35		29.1	-4.20 X	1.21	4	EM

Consensus (All Labs) Results

Month Mean	41.10	Grand Mean	40.83
Avg SD	2.37	Avg SD Months	1.90
SD btwn Labs	2.81	SD btwn Labs	2.80
Labs Incld	11	Labs Incld	11

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LE	L&W Crush Tester 840	TF	TMI Digital Crush Tester, Model 17-19
TH	TMI Monitor/Compression Tester, Model 17-76	TX	TMI (model not specified)
XX	Instrument make/model not specified by lab		

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2WUFJ4	42.5	-0.91	1.33		42.4	-1.13	0.94	4	LD
36L37U	45.3	0.38	1.21		43.6	-0.49	2.34	4	LD
3UH8PA	47.0	1.20	1.50		43.9	-0.35	2.12	4	EM
69VYNZ	44.0	-0.22	1.05		45.6	0.53	1.08	4	LC
6B46A2	42.0	-1.13	1.45		43.1	-0.78	1.72	3	LD
6EWBKX	46.6	1.01	1.39		46.5	1.03	1.36	4	TG
6HWMFX	37.7	-3.10 X	3.51	H	43.9	-0.34	4.71	H 4	TD
9H3468	41.2	-1.49	0.79		40.7	-2.03 *	0.52	4	TD
A7997H	41.6	-1.32	1.21		41.8	-1.49	0.47	4	TK
B34ZGX	43.8	-0.28	1.41		44.1	-0.22	1.42	4	TD
BEZ3ZU	44.2	-0.13	1.73		43.5	-0.54	0.67	4	EM
CHCBHQ	43.7	-0.32	0.44	L	49.2	2.44 *	3.78	H 4	LD
CMAVNV	45.2	0.34	1.79		44.8	0.12	0.35	4	LD
CWEMDP	45.8	0.63	1.83		45.1	0.27	1.35	4	LC
E7V7NY	42.9	-0.70	1.97		46.2	0.89	2.44	4	TJ
E874YV	44.6	0.09	1.84		45.0	0.26	0.83	4	LD
FUAN7C	40.4	-1.88	1.89		41.4	-1.67	1.11	4	LD
H3KHFY	43.8	-0.31	1.70		43.8	-0.38	0.86	4	EM
JJMKVH	42.1	-1.09	3.15	H	42.9	-0.88	0.65	4	EN
K4KGKN	44.8	0.16	1.34		44.8	0.12	1.17	4	LD
KDULXE	43.6	-0.40	1.55		42.8	-0.92	0.70	4	EM
LD9MXM	45.5	0.50	2.54		47.1	1.35	2.54	4	LD
M36WTQ	42.3	-0.99	1.44		42.3	-1.18	0.16	L 4	LC
M4ZBKP	43.8	-0.31	2.02		44.7	0.07	0.99	4	LC
MMB8XU	44.7	0.14	0.87		45.1	0.27	0.32	4	EM
MXVJA7	45.3	0.40	2.62		45.8	0.66	0.71	2	TF
NHTA4C	48.1	1.71	2.99	H	47.8	1.74	1.21	3	CT
NTXDAU	44.2	-0.13	1.47		42.5	-1.07	2.06	4	LC
PH8FF8	44.6	0.10	1.68		45.6	0.56	1.38	3	TG
PNU7ZG	40.5	-1.82	1.54		38.2	-3.37 X	6.60	H 4	TX
QW4UDF	46.5	0.97	0.91		45.6	0.57	1.26	2	TL
RP2ZYD	45.5	0.51	2.95	H	45.2	0.35	1.39	4	LY
TBXXVB	49.6	2.40 *	2.51		47.8	1.72	2.20	4	EM
U8BYUL	45.4	0.44	1.86		46.4	0.96	1.54	4	TD
UC7NGK	46.5	0.97	0.40	L	46.1	0.82	1.09	4	TH
UPAVDG	42.8	-0.74	0.82		42.9	-0.89	0.84	4	EM
URJYAE	42.8	-0.76	1.42		42.7	-0.96	0.79	3	LD
W4QNZE	45.0	0.28	2.08		45.0	0.21	0.78	4	LD
WN7BD8	45.0	0.25	1.78		45.2	0.37	1.65	3	EM

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
WYT96C	49.7	2.44 *	2.11	50.4	3.12 X	1.60	4	TB

Consensus (All Labs) Results

Month Mean	44.42	Grand Mean	44.55
Avg SD	1.78	Avg SD Months	1.63
SD btwn Labs	2.17	SD btwn Labs	1.88
Labs Incld	39	Labs Incld	38

Key to Instrument Codes Reported by Participants

CT	Con-Ten	EM	Emerson 1200 Series
EN	Emerson 2200	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W 830
TB	TMI Monitor/Compression Tester, Model 17-70	TD	TMI Digital Crush Tester, Model 17-09
TF	TMI Digital Crush Tester, Model 17-19	TG	TMI Digital Crush Tester, 17-76
TH	TMI Monitor/Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TK	TLS Compression Tester, Model 5184	TL	Tech-Lab Systems Compression
TX	TMI (model not specified)		

	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
2NV3D9	109.4	110.8	111.3	111.3	110.7	0.30	6.3	0.9	109.7	-0.12	7.8	1.3	16	TP
2WUFJ4	105.6	110.2	110.5	105.4	107.9	-0.67	6.9	2.8	108.1	-0.65	7.2	2.1	16	LA
36L37U	111.0	114.0	106.5	107.2	109.7	-0.06	8.8	3.5	108.3	-0.57	8.7	3.5	16	LZ
3VVGZV	108.9 L	108.6 L	111.2	111.4 L	110.0	0.06	4.6	1.5	111.4	0.42	5.2	2.5	15	XX
4BL2UN	107.1 L	108.0 L	109.0 L	108.2 L	108.1	-0.61	3.4	0.8	107.8	-0.74	3.5	0.8 L	16	LA
4RQ99Q	108.8 H	115.2	108.2	106.6	109.7	-0.05	9.2	3.8	110.6	0.17	9.4	2.2	16	AH
73KL48	113.8	112.9	115.8	113.6	114.0	1.44	7.9	1.2	111.4	0.43	10.4	4.1	16	AH
7EXLZZ	107.2	109.3	106.7	107.7	107.7	-0.73	7.7	1.1	106.6	-1.14	9.0	3.3	16	LC
8CL77Z	105.7	113.8	110.1	104.7	108.6	-0.44	9.3	4.2	108.0	-0.68	9.7	2.9	12	LC
8DTPLM	111.7	114.7	110.3	109.2	111.5	0.56	9.8	2.4	111.9	0.60	9.4	3.0	12	LA
8FKP27	114.1	107.8	107.1	109.3	109.6	-0.09	9.9	3.1	111.1	0.34	8.8	3.7	16	LC
8JHAN3	110.0	109.4	110.2	111.1	110.2	0.11	5.7	0.7	109.1	-0.33	6.4	1.2	16	AH
8WQQXT	117.6	118.4 H	117.8 *	123.3 X	119.3	3.25 X	13.1	2.7	117.5	2.41	*10.3	3.5	16	LC
9DCRCV	119.0 *	115.9	115.4	106.5	114.2	1.51	9.2	5.3	116.6	2.12	* 9.7	4.4	16	LZ
9H3468	107.4	106.0	107.7	108.0	107.3	-0.89	7.9	0.9	114.2	1.34	10.1	12.6 H	16	XX
9XYFJ3	104.4	107.9	106.4	106.0	106.2	-1.26	7.5	1.4	105.6	-1.45	8.5	2.8	16	LC
AN88QY	112.6	114.6	112.2	113.4	113.2	1.16	5.7	1.1	112.0	0.61	5.8	1.7	16	RE
AYQYY9	104.1	106.6	105.7	110.8	106.8	-1.06	9.3	2.9	109.3	-0.26	9.4	4.2	16	LA
B4YE8X	116.1	108.7 H	108.9 H	112.0	111.4	0.55	12.5	3.5	111.6	0.51	10.8	3.0	14	TB
BKL28U	109.5	109.2	111.8	112.8	110.8	0.34	7.4	1.8	110.0	-0.03	8.4	2.5	16	LC
C66JXQ	107.0	109.7	108.3	107.5	108.1	-0.60	7.1	1.2	111.5	0.46	8.4	3.4	16	LA
CMAVNV	107.0	106.2	109.2	104.7	106.8	-1.06	6.7	1.9	105.5	-1.49	8.0	2.1	16	LA
CWEMDP	109.1	106.4	107.1	111.5	108.5	-0.46	8.7	2.3	107.7	-0.76	8.1	2.6	16	AH
D89CQ4	110.3	107.4	104.5	107.4	107.4	-0.84	6.2	2.4	106.7	-1.08	5.5	5.1	16	LA
E4688F	114.5	112.2	110.7	115.7	113.3	1.18	4.7	2.2	111.6	0.49	5.4	2.4	15	LC
E874YV	110.3	111.2 H	111.6	106.5	109.9	0.02	12.2	2.3	111.7	0.53	10.0	3.5	16	AH
EUXBLX	115.5	114.4	116.6	107.8	113.6	1.29	8.1	3.9	113.3	1.06	9.2	3.2	16	LC
GGNA3D	109.5	111.9	110.8	109.5	110.4	0.21	10.1	1.2	110.5	0.14	9.8	2.5	16	LJ
GR82BM	105.6	113.3	109.6	109.2 H	109.4	-0.14	10.8	3.2	109.5	-0.20	9.5	2.3	16	TB
HHXVXW	107.0	102.2	104.3	105.1	104.7	-1.79	8.7	2.0	106.1	-1.30	8.6	3.0	16	LA
KZQE3H	124.6 X	117.9	124.1 XH	117.2 *	121.0	3.83 X	11.6	3.9	120.3	3.34	X10.2	3.2	15	LA
LD9MXM	112.4	111.7	112.6	111.7	112.1	0.78	7.8	0.5 L	112.7	0.85	7.4	0.6 L	16	LA
MBFYEQ	108.0	102.1 *	111.3	107.4	107.2	-0.91	8.8	3.8	108.3	-0.56	8.1	3.1	8	LC
MHUZCF	113.7 H	117.5	109.7 H	109.8	112.7	0.98	12.9	3.7	109.6	-0.15	11.0	3.8	16	LC
NGGUAB	103.8	No Data	106.7	106.4	105.6	-1.46	8.3	1.6	106.5	-1.18	9.1	3.4	14	LJ

Containerboard Interlaboratory Testing Program

Analysis 205

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

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
NHTA4C	112.4	116.2	108.9	106.4	111.0	0.39	10.3	4.3	110.8	0.22	10.6	3.8	12	XX
NTXDAU	117.8	114.5	112.8	108.4 H	113.4	1.22	10.4	3.9	112.7	0.84	9.5	2.6	16	LA
PPR8BE	111.7	113.4	110.3	115.9	112.8	1.03	9.7	2.4	112.4	0.76	9.7	4.6	16	AX
R9U3B9	114.1	115.5	117.9 *	115.5	115.8	2.04 *	8.1	1.6	112.0	0.63	7.9	5.4	16	LC
R9WTKC	107.0	103.9	No Data	No Data	105.5	-1.51	7.0	2.2	105.9	-1.36	7.5	1.5	14	LA
RP2ZYD	115.6	117.0	115.3	114.8	115.7	2.00 *	8.1	1.0	115.9	1.89	11.9	3.0	16	LZ
TQ9XMF	107.5	114.0	110.9	107.6	110.0	0.05	9.1	3.1	108.0	-0.69	9.1	3.2	16	LC
U4DD8P	113.0	106.2	109.8	115.4	111.1	0.43	9.2	4.0	117.5	2.41 *	9.2	8.1 H	16	XX
UHXRBP	111.5	No Data	No Data	No Data	111.5	0.55	8.3	0.0	110.8	0.24	8.6	2.1	13	LC
URJYAE	106.3	113.1	105.7	105.1	107.5	-0.79	8.9	3.8	106.6	-1.12	9.0	3.1	16	LC
VJNDGK	107.3	104.8	103.9 L	109.3	106.3	-1.21	8.3	2.4	109.0	-0.35	8.3	2.8	16	LC
VWPUK2	120.2 *	111.7	109.1	111.9	113.2	1.16	9.0	4.8	111.3	0.39	11.2	4.3	16	LZ
W4QNZE	107.8	117.4	116.7	112.1	113.5	1.26	8.3	4.5	111.6	0.49	10.0	3.6	16	LA
WNUBJX	110.4	110.2	110.4	110.5	110.4	0.18	5.6	0.1 L	110.6	0.17	5.5	0.3 L	16	LJ
X4J2W7	108.6	105.9	109.1 H	106.9	107.6	-0.76	12.1	1.5	108.0	-0.68	9.8	2.7	16	LB
XBLVB8	100.7 *	106.8 L	103.9	103.0	103.6	-2.16 *	5.7	2.5	103.2	-2.24 *	7.6	3.0	16	AH
Y38GPG	107.0	107.1	113.0	110.5	109.4	-0.15	8.2	2.9	109.1	-0.33	9.0	2.0	16	LA
YY4QGG	108.3	101.2 *	105.3	111.8	106.7	-1.10	9.0	4.5	106.8	-1.06	8.5	5.8	16	AA

Consensus (All Labs) Results

Wk Mean	110.09	110.69	109.97	109.56
Avg SDr	8.69	8.74	8.78	8.49
SD btwn Labs	4.16	4.43	3.57	3.40
Labs Incld	52	51	50	50
Labs Excld	1	0	1	1
Labs not Rcvd	0	2	2	2

Month Mean	109.84
Avg SD	8.58
SD btwn Labs	2.90
SD btwn Wks	2.80
Labs Incld	51

Grand Mean	110.08
Avg SD	8.80
SD btwn Labs	3.07
SD btwn Wks	3.73
Labs Incld	52

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
2NV3D9	111.8	111.1	112.8	113.7	112.4	-0.06	7.3	1.1	112.3	-0.10	8.0	1.1 L	12	TP
2WUFJ4	112.1	106.1	107.3	111.3	109.2	-0.82	10.7	2.9	109.8	-0.80	8.3	2.5	12	LA
36L37U	110.7	106.7	107.9	112.4	109.4	-0.76	11.1	2.6	109.7	-0.85	11.0	4.6	12	LZ
3VVGZV	120.6 L	119.6	118.3	119.4	119.5	1.66	6.6	0.9	115.6	0.83	7.5	4.6	12	XX
4BL2UN	120.2 L	121.2 *L	119.5 L	122.5 *L	120.9	1.99 *	3.0	1.3	119.9	2.04 *	3.1	2.1	12	LA
4RQ99Q	112.2	109.8	111.2	110.6	111.0	-0.40	11.2	1.0	110.0	-0.76	11.0	1.9	12	AH
73KL48	111.8	113.2	114.6	105.6	111.3	-0.31	8.1	4.0	112.6	-0.01	9.4	4.1	12	AH
7EXLZZ	113.8	116.0	113.9	107.7	112.9	0.06	10.3	3.6	112.2	-0.13	10.7	5.7	12	LA
8CL77Z	101.9 *	112.3	115.5	106.8	109.2	-0.83	13.3	6.0	108.0	-1.31	11.9	4.5	8	LC
8DTPLM	118.8	116.7	119.6	105.3	115.1	0.60	9.8	6.6 H	112.3	-0.10	11.1	6.2	12	LA
8FKP27	106.7	109.9	105.9	108.5	107.7	-1.17	8.7	1.8	109.7	-0.83	11.7	4.3	12	LC
8JHAN3	112.1	112.8	113.2	112.4	112.6	0.01	6.6	0.5 L	112.3	-0.10	7.1	0.5 L	12	AH
8WQQXT	115.7	126.5 X	121.3	123.6 *	121.8	2.21 *	10.4	4.6	120.4	2.16 *11.9		3.2	12	LC
9DCRCV	120.8	118.0	125.1 *	120.3	121.0	2.03 *	11.4	3.0	120.4	2.17 *12.4		3.1	12	LZ
9H3468	111.0	111.5 H	115.7 H	111.4	112.4	-0.05	15.3	2.2	123.9	3.16 X13.2		15.3 H	12	XX
9XYFJ3	104.8	111.9	110.3	115.2	110.5	-0.50	9.8	4.3	110.3	-0.65	8.8	6.7	12	LC
AN88QY	111.2	112.4	112.2	112.6	112.1	-0.12	6.3	0.6	112.1	-0.16	6.2	3.0	12	RE
AYQYY9	106.8	112.4	108.5	110.3	109.5	-0.75	11.2	2.4	110.1	-0.71	11.4	3.3	12	LA
B4YE8X	120.8	119.6	112.7	114.2	116.8	1.02	12.9	4.0	118.1	1.54	12.1	15.9 H	11	TB
BKL28U	109.4	108.7	113.2	102.5	108.5	-1.00	10.9	4.4	110.1	-0.72	11.1	3.8	8	LC
C66JXQ	117.4	116.3	116.3	117.1	116.8	1.01	6.4	0.6	116.4	1.05	7.5	1.7	12	LA
CMAVNV	108.2	104.8	105.3	103.6	105.5	-1.71	11.8	1.9	108.0	-1.30	11.3	2.5	12	LA
CWEMDP	117.3	110.9	112.7	110.9	113.0	0.08	9.2	3.0	109.9	-0.77	8.3	4.2	12	AH
D89CQ4	113.6	111.6 L	112.2 L	109.1	111.6	-0.24	5.4	1.9	112.2	-0.13	4.8	1.1 L	12	LA
E874YV	116.5	111.5	109.2	110.4	111.9	-0.17	10.3	3.2	114.6	0.53	10.7	3.0	12	AH
EUXBLX	123.2 *	111.9	116.2	123.0 *	118.6	1.44	11.1	5.5	114.3	0.46	11.4	5.2	11	LC
GGNA3D	117.1	112.6	114.2	106.4	112.6	-0.01	9.9	4.5	114.2	0.42	10.3	4.2	12	LJ
GR82BM	110.3	110.5	108.0	109.4	109.6	-0.73	11.2	1.1	110.8	-0.53	10.9	3.9	12	TB
HHXVXW	109.3	105.0	103.0 *	113.4	107.7	-1.19	10.8	4.7	107.2	-1.55	10.8	4.9	12	LA
KZQE3H	122.5	117.2	122.4 *	123.9 *	121.5	2.14 *	9.1	2.9	119.6	1.96 *10.0		4.0	12	LA
LD9MXM	115.0	114.1	114.8	114.3	114.6	0.47	6.6	0.4 L	114.8	0.59	8.3	0.4 L	12	LA
MBFYEQ	115.8	110.2	108.8	109.9	111.2	-0.35	9.1	3.1	111.2	-0.42	9.1	3.1	4	LC
MHUZCF	112.2	115.6	112.2	112.2	113.0	0.10	9.2	1.7	112.3	-0.11	10.2	2.8	8	LC
NGGUAB	109.3	No Data	112.8	111.7	111.3	-0.32	13.3	1.8	110.3	-0.68	10.4	4.2	11	LJ
NHTA4C	105.1	106.4	110.6	106.1 H	107.1	-1.34	12.8	2.4	110.6	-0.60	10.6	4.6	8	XX

Containerboard Interlaboratory Testing Program

Analysis 206

Bursting Strength (Mullen), 56 lb Linerboard - 56A2

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
NTXDAU	109.5	117.0	111.4	114.1	113.0	0.10	11.8	3.3	111.9	-0.22	11.3	4.0	12	LA
PPR8BE	112.0	115.7	116.9	113.0	114.4	0.43	9.3	2.3	116.4	1.05	12.2	2.5	12	AX
R9U3B9	116.3	118.0	121.9	121.5	119.4	1.64	8.6	2.7	117.5	1.34	9.7	5.9	12	LC
R9WTKC	106.3	108.6 H	No Data	No Data	107.4	-1.25	15.3	1.6	109.0	-1.03	12.4	4.2	10	LA
RP2ZYD	119.6	121.9 *	116.9	118.2	119.1	1.57	8.2	2.1	116.5	1.08	10.2	3.8	12	LZ
TQ9XMF	102.8	111.7	108.3	105.5	107.0	-1.34	12.7	3.8	111.4	-0.35	13.2	5.5	12	LC
U4DD8P	111.4	105.5	107.1	109.9	108.5	-0.99	10.8	2.7	121.0	2.33	*11.3	10.7 H	12	XX
UHXRBP	114.3	No Data	No Data	No Data	114.3	0.42	10.3	0.0	111.6	-0.31	12.7	3.9	9	XX
URJYAE	107.8	111.3	111.9	112.0	110.7	-0.45	9.3	2.0	110.1	-0.72	10.5	3.8	12	LC
VJNDGK	107.7	108.0	109.4	106.2	107.8	-1.15	11.3	1.3	110.7	-0.56	10.4	4.5	12	LC
VWPUK2	121.7	113.6	111.1	109.9	114.1	0.36	12.8	5.3	112.9	0.07	12.4	7.1	12	LZ
W4QNZE	110.4	117.5	114.8	115.6	114.6	0.48	9.4	3.0	113.2	0.16	11.1	4.1	12	LA
WNUBJX	113.4	113.4	113.2	113.9	113.4	0.20	6.6	0.3 L	113.6	0.25	5.4	0.4 L	12	LJ
X4J2W7	112.9	110.8	102.9 *	109.4	109.0	-0.87	9.9	4.3	108.7	-1.11	9.5	3.8	12	LB
XBLVB8	102.0 *	112.4	108.1	111.0	108.4	-1.01	10.9	4.6	107.5	-1.46	10.1	4.4	8	AH
Y38GPG	108.8	111.2	115.3	112.4	111.9	-0.16	10.2	2.7	111.8	-0.25	10.5	2.6	12	LA
YY4QGG	112.3	108.9	112.5	117.0	112.7	0.02	9.4	3.3	110.4	-0.65	11.4	3.2	12	AA

Consensus (All Labs) Results

Wk Mean	112.60	112.53	112.78	112.35	Month Mean	112.60	Grand Mean	112.67
Avg SDr	9.73	10.28	10.53	10.12	Avg SD	10.24	Avg SD	10.28
SD btwn Labs	5.34	4.18	4.83	5.24	SD btwn Labs	4.15	SD btwn Labs	3.56
Labs Incld	52	49	50	50	SD btwn Wks	3.17	SD btwn Wks	4.71
Labs Excld	0	1	0	0	Labs Incld	52	Labs Incld	51
Labs not Rcvd	0	2	2	2				

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
2NV3D9	88.6	91.0	89.8	92.1	90.4	0.19	3.1	1.5	90.4	0.26	3.4	1.8	16	TJ
2WUFJ4	87.2	87.6	89.6	88.4	88.2	-0.23	2.4	1.0	85.7	-0.93	2.7	3.3	16	LD
36L37U	84.6	78.6 *	87.2	89.8	85.1	-0.84	3.7	4.8	87.9	-0.39	3.2	3.1	16	LD
3NBLW7	84.3	83.7	86.9	85.7	85.1	-0.83	3.4	1.4	85.6	-0.96	3.0	2.2	16	LD
3VVGZV	79.1	81.4	80.0	79.2	79.9	-1.84	3.5	1.1	81.8	-1.93	3.2	2.7	16	LD
4BL2UN	79.9	79.7	78.0 *	78.8	79.1	-2.01 *	1.8	0.9	82.4	-1.77	1.6	2.2	16	TU
69VYNZ	86.5	85.8	86.3	84.8	85.8	-0.69	2.5	0.8	86.2	-0.80	2.6	0.9	16	LC
6EWBKX	93.6 L	94.9	91.5	93.5	93.4	0.78	1.8	1.4	91.4	0.51	2.3	1.7	16	TH
6HWMFX	95.3	97.9	92.2	94.0	94.9	1.07	4.0	2.4	94.1	1.18	2.3	2.0	16	TD
73KL48	95.2	86.7 H	87.7	92.7	90.6	0.24	4.6	4.0	93.5	1.04	3.9	3.2	16	LC
7EXLZZ	87.2	86.7	88.4	89.2	87.9	-0.29	3.0	1.1	88.3	-0.29	2.8	1.7	16	LD
8CL77Z	96.5	68.6 XH	72.5 XH	66.4 XH	76.0	-2.61 *	5.8	13.9 H	86.2	-0.82	4.1	10.5 H	12	LC
8DTPLM	103.6 *	105.5 *	102.4 *	101.1 *	103.2	2.69 *	3.4	1.9	102.3	3.26 X	3.2	1.2	12	LD
94JK9W	93.8	91.9	88.9	91.6	91.5	0.42	4.5	2.0	88.9	-0.14	4.3	4.1	16	TH
9DCRCV	88.4	89.3	90.9	87.6	89.1	-0.06	2.6	1.4	89.5	0.01	3.1	1.3	16	LC
9XYFJ3	88.8	90.3	89.8	95.1	91.0	0.31	3.4	2.8	90.9	0.38	3.3	2.4	16	LD
A7997H	87.7	86.2	88.1	88.4	87.6	-0.35	3.5	1.0	88.2	-0.31	3.0	2.0	16	MB
AN88QY	88.4	89.3	89.2	89.3	89.1	-0.06	2.8	0.5 L	88.0	-0.36	2.9	2.4	16	LZ
B29D3A	87.3	85.5 L	86.5	85.8	86.3	-0.61	2.6	0.8	86.4	-0.75	3.2	1.8	10	EX
B4YE8X	86.8	93.4	93.2	87.0	90.1	0.14	3.9	3.7	93.9	1.14	3.6	5.7	14	LD
BKL28U	89.0	89.7	86.2	87.3	88.0	-0.26	2.7	1.6	88.4	-0.27	2.9	1.7	8	LD
C66JXQ	89.6	90.4	88.2	85.4	88.4	-0.19	2.7	2.2	90.0	0.15	2.9	2.1	16	LD
CMAVNV	88.7	92.6	92.9	90.8	91.2	0.36	3.3	1.9	91.8	0.61	2.9	2.0	16	LD
CWEMDP	89.4	92.3	93.7	85.8	90.3	0.18	2.3	3.5	90.2	0.20	3.0	2.1	16	LC
D89CQ4	89.8	90.5	90.6	90.6 L	90.4	0.19	2.6	0.4 L	89.7	0.08	2.0	0.8 L	16	LZ
E874YV	90.5	90.5	88.4	89.9	89.8	0.09	2.8	1.0	87.6	-0.47	2.9	1.9	16	LD
EUXBLX	85.8	86.7	87.0	83.4	85.7	-0.71	2.8	1.7	89.3	-0.03	3.5	4.0	16	LD
GGNA3D	93.9	93.3	94.2	87.7	92.3	0.56	3.4	3.1	91.8	0.62	3.0	2.0	16	LD
H32JGF	79.1	79.3	80.0	76.8 *	78.8	-2.07 *	3.3	1.4	82.1	-1.85	3.4	2.9	16	LC
HHXVXW	93.4	83.6	88.2	85.4	87.7	-0.34	2.7	4.3	88.5	-0.22	2.8	3.8	16	LZ
JJMKVH	82.1	81.2 L	81.1	83.3	81.9	-1.45	3.1	1.0	83.3	-1.55	2.7	1.4	16	EN
K4KGKN	92.0	93.2 L	92.6 L	94.2	93.0	0.70	1.9	1.0	93.4	1.02	1.9	1.2	16	LD
KNDD7P	91.8 L	90.9	92.1	91.7	91.6	0.44	2.1	0.5 L	90.1	0.17	5.9	2.2	16	LD
KZQE3H	100.8 *	101.5 L	99.3	97.0	99.6	2.00 *	3.0	2.0	97.8	2.11 *	2.8	2.0	15	LZ
L6B3RK	79.4 H	94.0	93.6	90.3 H	89.3	-0.01	5.7	6.8 H	87.7	-0.44	5.2	5.7	16	MB

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
LD9MXM	91.8	91.9	91.8	92.1	91.9	0.49	2.4	0.1 L	92.0	0.66	3.4	0.5 L	16	LD
MBFYEQ	94.1	93.0	95.4 L	92.1	93.6	0.83	3.0	1.4	91.9	0.63	3.0	2.8	8	LD
MHUZCF	98.7	97.1 H	97.6 H	97.9	97.8	1.65	6.5	0.7	99.2	2.47	*10.8	4.2	16	LC
MMB8XU	90.1	91.3	90.9	91.7 L	91.0	0.32	1.8	0.7	87.4	-0.50	3.0	3.3	16	EM
MPGTNE	98.3	97.0	98.9	97.6	97.9	1.67	3.4	0.8	96.3	1.73	3.0	1.8	16	TU
NGGUAB	89.1	No Data	92.9	89.5	90.5	0.22	3.5	2.1	92.9	0.88	3.1	1.7	14	LD
NKG2TM	90.9	89.5	92.8	89.5	90.7	0.25	3.3	1.5	94.3	1.23	3.2	2.4	16	TH
NTXDAU	92.0	99.4	97.3	100.2 *H	97.2	1.53	5.2	3.7	85.2	-1.06	8.2	8.5 H	16	LC
PPR8BE	74.5 *	71.8 X	73.3 X	74.8 *	73.6	-3.08 X	3.7	1.4	75.5	-3.53 X	3.9	2.6	16	LC
R9U3B9	92.2	95.4	94.8	93.2	93.9	0.88	3.2	1.5	89.8	0.09	2.6	2.8	15	LD
R9WTKC	87.7	85.5	82.0	83.1	84.6	-0.94	3.9	2.5	84.8	-1.17	2.9	2.3	16	LC
RP2ZYD	88.5	85.2	85.1	88.3	86.8	-0.51	3.6	1.9	88.0	-0.35	3.2	2.5	16	LG
URJYAE	88.3	89.7	88.7	89.9	89.2	-0.04	3.3	0.8	88.2	-0.30	2.9	1.7	16	LD
VDTQJQ	81.9	83.8	82.1	82.1	82.5	-1.35	2.4	0.9	81.1	-2.10	*2.1	1.2	16	RS
VJNDGK	87.0	85.7	87.6	86.5	86.7	-0.53	3.3	0.8	88.7	-0.18	3.3	1.6	16	LD
WNCKAD	83.7	104.1 *	83.1	84.0 H	88.7	-0.13	4.8	10.3 H	92.8	0.85	4.8	8.5 H	14	MB
WNUBJX	90.3	90.2	90.5	90.2	90.3	0.18	2.0	0.1 L	89.9	0.13	2.2	0.4 L	16	LD
X4J2W7	89.3	87.2	88.9	89.3	88.7	-0.14	3.2	1.0	90.2	0.20	3.1	2.6	16	LC
XBLVB8	87.8	93.2	99.9	90.8 H	92.9	0.69	4.2	5.1	95.8	1.61	3.9	4.3	16	LZ

Consensus (All Labs) Results

Wk Mean	89.15	90.08	89.90	88.99	Month Mean	89.38	Grand Mean	89.41
Avg SDr	3.36	3.46	3.29	3.31	Avg SD	3.42	Avg SD	3.67
SD btwn Labs	5.54	5.91	5.24	5.39	SD btwn Labs	5.13	SD btwn Labs	3.95
Labs Incld	54	51	52	53	SD btwn Wks	3.26	SD btwn Wks	3.38
Labs Excld	0	2	2	1	Labs Incld	53	Labs Incld	52
Labs not Rcvd	0	1	0	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LG	L&W 753
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
RS	Regmed Digital Crush Tester CT-2000	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)		

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 56 lb Linerboard - 56A2

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
2NV3D9	141.3	139.4	141.3	141.4	140.8	0.00	5.3	0.9	138.5	-0.17	9.8	3.1	12	TJ
2WUFJ4	143.3	139.2	142.3	142.7	141.9	0.16	3.6	1.8	135.9	-0.53	3.9	4.8	12	LD
36L37U	140.5	122.4 *	139.7	143.3	136.5	-0.67	5.1	9.5 H	138.3	-0.21	4.6	5.5	12	LD
3NBLW7	133.6	132.7	139.2	131.6	134.3	-1.01	6.5	3.4	130.7	-1.23	5.9	6.2	12	LD
3VVGZV	126.5 *	127.6	122.7 *	121.0 *	124.5	-2.51 *	6.0	3.1	127.6	-1.64	5.1	5.6	12	LD
4BL2UN	127.9 L	128.9 L	127.8 L	127.0 L	127.9	-1.98 *	1.8	0.8	131.1	-1.17	2.7	2.5	12	TU
69VYNZ	137.3	136.8 L	137.5	140.2	138.0	-0.44	3.3	1.5	137.1	-0.36	3.6	1.5	12	LC
6EWBKX	149.4	155.3 L	150.4	150.7	151.4	1.63	3.6	2.6	145.8	0.80	4.0	5.3	12	TH
6HWMFX	146.1	154.8	150.9	158.7 *	152.6	1.81	5.6	5.4	145.5	0.77	3.3	6.4	12	TD
73KL48	143.7	141.6	138.6	145.5	142.4	0.23	4.8	3.0	140.6	0.11	6.4	5.1	12	LC
7EXLZZ	139.6	137.6	138.1	136.7	138.0	-0.44	3.8	1.2	137.4	-0.33	3.6	1.6	12	LD
8CL77Z	110.2XH	98.3 XH	108.6 XH	104.3 XH	105.4	-5.44 X	11.6	5.3	121.0	-2.53 *	9.4	17.2 H	8	LC
8DTPLM	162.2XH	160.2 *	162.6 *	161.1 *	161.5	3.17 X	7.1	1.1	157.9	2.43 *	6.0	3.0	12	LD
94JK9W	136.7	139.1	145.7	142.8 H	141.1	0.04	7.1	4.0	138.1	-0.23	6.8	5.3	8	TH
9DCRCV	138.8	138.3	136.4	138.8	138.1	-0.42	4.8	1.2	137.2	-0.35	4.7	2.1	12	LC
9XYFJ3	148.1	148.7 H	159.9 *	153.4	152.5	1.80	8.2	5.5	148.4	1.16	6.7	4.8	12	LD
A7997H	143.2	138.9	139.0	142.1	140.8	-0.01	5.2	2.2	138.4	-0.19	4.6	4.1	12	MB
AN88QY	138.4	138.1	138.6	137.7	138.2	-0.40	2.8	0.4 L	133.5	-0.85	3.5	3.6	12	LZ
B29D3A	143.3	139.8	133.6	139.6	139.1	-0.27	4.8	4.1	138.6	-0.16	5.3	3.6	6	EX
B4YE8X	138.3	135.4	138.3	136.6	137.2	-0.57	5.5	1.4	144.8	0.67	5.4	10.1	10	LD
BKL28U	136.6	142.8	137.2	137.0	138.4	-0.37	4.7	2.9	138.4	-0.19	4.7	2.9	4	LD
C66JXQ	141.4	135.9	136.8	131.7	136.4	-0.67	3.9	4.0	138.4	-0.19	4.2	3.4	11	LD
CMAVNV	132.7	143.0	141.5	136.7	138.5	-0.36	5.8	4.7	138.6	-0.16	5.3	3.5	12	LD
CWEMDP	142.7	140.5	142.1 L	147.1	143.1	0.35	4.1	2.8	142.3	0.34	4.3	2.7	12	LC
D89CQ4	141.8	140.0	140.1	144.3	141.6	0.11	4.3	2.0	140.7	0.12	3.5	2.5	12	LZ
E874YV	135.7	138.5	133.7	136.9	136.2	-0.71	4.5	2.0	136.7	-0.42	4.0	1.4 L	12	LD
EUXBLX	134.9	137.9	132.4	137.1	135.6	-0.81	3.5	2.5	142.0	0.30	5.3	7.6	11	LD
GGNA3D	142.9	147.1	145.1	142.8	144.5	0.56	3.9	2.1	146.1	0.85	4.1	2.9	12	LD
H32JGF	133.9	133.0	134.5	133.5	133.7	-1.09	4.5	0.6 L	129.6	-1.38	6.1	4.9	8	LC
HHXVXW	148.4	149.0 H	141.6	144.9	145.9	0.78	6.9	3.4	142.1	0.32	5.7	4.7	12	LZ
JJMKVH	127.3	129.1	130.4	127.3	128.5	-1.89	3.6	1.5	129.5	-1.38	4.2	2.2	12	EN
K4KGKN	143.8	144.8	146.1	144.2	144.7	0.60	2.8	1.0	144.3	0.61	2.5	1.2 L	12	LD
KNDD7P	143.2	141.7 L	139.4	146.4	142.7	0.28	4.5	2.9	142.5	0.36	4.5	3.1	12	LD
KZQE3H	150.7	152.0	147.3	149.8 L	149.9	1.39	4.2	2.0	147.2	1.00	4.2	2.7	12	LZ
L6B3RK	129.5 H	146.1	145.9	144.7	141.5	0.11	9.9	8.1 H	140.4	0.09	8.3	7.9	12	MB

Containerboard Interlaboratory Testing Program
Analysis 216
Ring Crush, 56 lb Linerboard - 56A2
TAPPI Official Test Method T822

Report #596 (E)
May 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
LD9MXM	142.2	142.0	141.9 L	141.3	141.9	0.16	2.9	0.4 L	142.5	0.37	3.3	0.7 L	12	LD
MBFYEQ	145.2	142.5	145.1	143.8	144.2	0.51	4.4	1.3	144.2	0.59	4.4	1.3 L	4	LD
MHUZCF	151.8	151.4 H	149.6	150.1 H	150.7	1.52	9.6	1.0	156.7	2.27 *	8.9	6.4	8	LC
MMB8XU	138.2	133.6	135.3	137.1	136.0	-0.74	4.5	2.0	132.1	-1.03	5.2	3.3	12	EM
MPGTNE	154.6 *	153.6	146.9	150.3	151.3	1.61	5.9	3.5	148.9	1.22	5.6	3.1	12	TU
NGGUAB	146.7	No Data	145.3	142.3	144.8	0.60	6.3	2.3	144.8	0.67	5.5	2.5	11	LD
NKG2TM	146.2	146.0	145.4	146.3	146.0	0.79	4.7	0.4 L	146.5	0.90	4.5	1.8	12	TH
NTXDAU	148.4	153.2 H	155.5 H	151.9 H	152.3	1.75	9.2	3.0	137.0	-0.38	13.4	11.6 H	12	LC
PPR8BE	122.8 *	118.9 *	120.7 *	120.0 *	120.6	-3.10 X	5.5	1.6	123.9	-2.14 *	6.1	3.8	12	LC
R9U3B9	144.2	143.6	147.2	146.9	145.5	0.71	4.2	1.9	138.7	-0.15	3.8	5.6	11	LD
R9WTKC	130.5	132.9	129.8	132.8	131.5	-1.43	4.5	1.6	132.9	-0.93	3.9	3.8	12	LC
RP2ZYD	135.9	138.2	132.5	136.6	135.8	-0.77	4.4	2.4	137.5	-0.31	4.0	2.9	12	LY
URJYAE	136.4	134.5	135.9	135.7	135.6	-0.80	4.0	0.8	137.7	-0.28	4.2	2.0	12	LD
VDTQJQ	134.1	132.9	135.6	133.4	134.0	-1.05	2.7	1.2	129.1	-1.43	2.7	7.3	12	RS
VJNDGK	140.5	140.6	141.9	139.9	140.7	-0.02	3.9	0.9	140.9	0.15	4.1	2.0	12	LD
WNCKAD	132.8	169.1 XH	136.3	139.5 H	144.4	0.55	8.9	16.7 H	151.1	1.52	7.2	14.6 H	10	MB
WNUBJX	140.3	140.7	140.4	140.6	140.5	-0.05	4.4	0.2 L	139.8	0.00	3.0	0.5 L	12	LD
X4J2W7	137.4	138.0	140.8	141.3	139.4	-0.22	4.8	2.0	145.5	0.77	4.7	5.7	12	LC
XBLVB8	143.4	155.2	156.4	152.4 H	151.8	1.69	5.9	5.9	154.2	1.94 *	5.5	4.7	8	LZ

Consensus (All Labs) Results

Wk Mean	139.86	140.66	140.74	141.08
Avg SDr	5.41	5.32	5.11	5.19
SD btwn Labs	6.80	8.43	8.16	8.16
Labs Incld	52	51	53	53
Labs Excld	2	2	1	1
Labs not Rcvd	0	1	0	0

Month Mean	140.84
Avg SD	5.29
SD btwn Labs	6.52
SD btwn Wks	3.87
Labs Incld	51

Grand Mean	139.79
Avg SD	5.48
SD btwn Labs	7.44
SD btwn Wks	5.43
Labs Incld	54

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
LY	L&W Crush Tester 958
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
26ZARB	20.1 *	20.9	21.5	20.9 *	20.9	-2.04 *	1.4	0.6	20.2	-3.18 X	1.8	1.5 H	16	LZ
2NV3D9	23.0	23.6 L	23.2	23.1	23.2	-0.12	1.1	0.3	23.0	-0.38	1.2	0.4	16	TT
2WUFJ4	21.8 L	21.7	22.9 L	22.4 L	22.2	-0.95	1.0	0.6	22.3	-1.14	1.2	0.4	16	BK
36L37U	22.3	22.9	23.1	22.7	22.7	-0.53	1.7	0.3	23.1	-0.34	1.7	0.7	16	LY
3NBLW7	21.5	21.1	22.0	21.0	21.4	-1.59	1.6	0.4	22.0	-1.43	1.5	0.6	16	LH
4GNAZG	21.8	23.0 H	22.8	24.6 H	23.0	-0.27	2.4	1.2	22.6	-0.77	2.2	1.0	8	LU
4WYRA4	24.0	24.2	24.7	24.1	24.2	0.69	1.6	0.3	24.0	0.54	1.5	0.5	16	LH
6HWMFX	23.0	23.5	23.4	23.9	23.4	0.04	1.5	0.4	28.9	5.43 X	2.4	4.4 H	12	DW
73KL48	22.9	23.4	22.7	22.5	22.9	-0.40	1.6	0.4	22.9	-0.55	2.7	0.8	15	LH
7EXLZZ	22.4	22.0	22.1	22.6	22.3	-0.89	1.4	0.3	22.9	-0.51	1.6	0.7	16	LA
8CL77Z	21.7	23.6	20.7	23.9	22.5	-0.72	1.6	1.5 H	22.5	-0.95	1.8	1.2	12	LA
8FKP27	21.2	23.8	23.0	22.4	22.6	-0.62	1.6	1.1	22.9	-0.49	1.6	0.8	16	LA
8JHAN3	24.1	23.7	23.3 L	23.2	23.6	0.16	1.2	0.4	23.3	-0.14	1.1	0.6	16	TT
8WQQXT	24.1	23.8	23.6	23.9	23.9	0.39	1.5	0.2	23.7	0.23	1.6	0.6	12	LA
9DCRCV	23.6	23.0	21.7	22.7	22.7	-0.52	1.5	0.8	22.8	-0.58	1.6	0.6	16	LW
9XYFJ3	24.0	23.2	23.9	25.1	24.1	0.55	1.8	0.8	24.2	0.74	1.8	0.7	16	LA
A8Z6UC	23.8 H	23.1	23.8 H	24.6	23.8	0.36	2.2	0.6	23.1	-0.37	2.0	0.7	16	LA
AYQYY9	25.1	25.1	25.5	24.7	25.1	1.40	2.0	0.3	24.8	1.35	1.9	0.8	16	LU
B29D3A	24.3 L	24.8 L	25.1 L	25.5 L	24.9	1.27	0.0	0.5	24.6	1.20	0.0	0.8	10	TT
B4YE8X	24.8	23.1	23.4	22.9	23.6	0.17	1.8	0.9	24.2	0.73	1.8	0.8	14	LW
BKL28U	22.4	22.6	23.0	24.0	23.0	-0.29	1.6	0.7	23.0	-0.45	1.6	0.5	16	LU
C66JXQ	23.1	22.4	23.4	22.0	22.7	-0.52	1.7	0.6	23.5	0.07	1.6	0.8	16	LA
CMAVNV	26.1 L	26.3 *	25.9	24.2	25.6	1.82	1.8	1.0	25.0	1.58	1.7	0.9	16	LZ
CWEMDP	23.3	23.2	23.2	23.2	23.2	-0.14	1.7	0.0 L	23.1	-0.31	1.7	0.4	16	LU
E4688F	25.8	24.7	25.7 H	26.9 *	25.8	1.97 *	2.0	0.9	23.7	0.32	1.8	1.6 H	16	LA
E874YV	23.1	25.3	24.3	24.9	24.4	0.82	1.8	0.9	24.0	0.56	1.9	1.1	16	LU
EUXBLX	22.6 L	22.0	22.1	22.9	22.4	-0.78	1.6	0.4	22.7	-0.72	1.8	1.0	16	LZ
EYTWG8	24.1	25.9	25.7	25.5	25.3	1.56	1.5	0.8	25.1	1.64	1.6	0.6	8	LH
GGNA3D	22.6	22.7	22.5	23.0	22.7	-0.56	1.8	0.2	23.2	-0.27	1.7	0.6	16	LA
GR82BM	21.7	22.4	22.7 H	22.7	22.4	-0.81	2.0	0.5	22.3	-1.14	1.8	0.5	16	LZ
HHXVXW	24.9	22.5	21.6	23.7	23.2	-0.17	1.7	1.4 H	22.2	-1.17	1.7	1.0	16	LA
JJMKVH	21.5	21.0	21.4	21.0	21.2	-1.74	1.4	0.3	21.5	-1.92	1.5	0.4	16	LY
K4KGKN	23.5	23.6	24.3	23.9	23.8	0.36	1.5	0.4	23.5	0.06	1.8	0.4	16	LY
KNDD7P	23.2	23.2	22.7	22.5	22.9	-0.39	1.5	0.4	22.8	-0.65	1.5	0.4	16	LY
KZQE3H	23.0	23.4	22.9	22.5	22.9	-0.35	2.0	0.3	23.2	-0.20	1.9	0.5	15	LW

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
L6B3RK	23.8	23.3	24.1	23.6	23.7	0.26	1.9	0.3	24.0	0.53	1.7	0.7	16	LA
LD9MXM	23.3	23.5	23.3	23.4	23.4	0.00	1.5	0.1 L	23.3	-0.14	1.5	0.1 L	16	LA
MHUZCF	26.8 *	27.2 *	27.8 X	26.5 *	27.1	3.00 X	1.8	0.6	25.7	2.29 *	1.9	1.0	16	LA
MPGTNE	24.5 L	25.5 L	24.2 L	23.3 L	24.4	0.82	0.0	0.9	24.7	1.25	0.0	0.7	16	LA
NGGUAB	22.4	No Data	22.5	22.3	22.4	-0.81	1.6	0.1 L	22.7	-0.68	1.7	0.5	14	LY
NKG2TM	21.0	21.3	20.6 *L	21.1	21.0	-1.92	1.7	0.3	21.9	-1.48	1.5	0.9	16	LH
NTXDAU	25.3	25.0	25.7	25.2	25.3	1.54	1.8	0.3	25.2	1.73	2.0	0.6	16	LU
P97TQV	26.0 H	25.7	26.4 *	25.6	25.9	2.05 *	2.2	0.3	25.5	2.05 *	1.9	0.8	16	LA
PPR8BE	21.7 H	21.3 H	23.0 H	23.9 H	22.5	-0.73	2.9	1.2	22.8	-0.65	2.4	0.9	16	LZ
R9U3B9	23.9	23.1	22.9	22.7	23.2	-0.18	1.8	0.5	23.5	0.03	1.8	0.5	16	LA
R9WTKC	21.1	21.8 L	21.5	21.7	21.5	-1.50	1.1	0.3	21.7	-1.71	1.1	0.4	16	LA
RP2ZYD	23.0	23.2	21.8	23.1	22.8	-0.49	1.4	0.6	22.7	-0.68	1.5	0.5	16	LU
UHXRBP	25.3	25.0	25.7	25.2	25.3	1.54	1.8	0.3	25.2	1.73	2.0	0.6	16	XX
URJYAE	23.7	23.2	23.1	22.4	23.1	-0.23	1.5	0.6	23.3	-0.13	1.6	0.5	16	LA
VJNDGK	24.0	23.3	23.8 L	23.7	23.7	0.28	1.5	0.3	23.5	0.12	1.6	0.5	16	LA
VWPUK2	26.1	25.6	25.9	25.1	25.7	1.87	2.1	0.4	28.1	4.61 X	2.1	6.3 H	16	LZ
WNCKAD	26.1	42.1 XH	26.6 *	25.6	30.1	5.44 X	2.8	8.0 H	27.7	4.28 X	2.0	7.8 H	14	LA
X4J2W7	24.7	23.6	23.8	24.8	24.2	0.70	1.9	0.6	24.2	0.80	1.7	0.5	16	LW
Y38GPG	23.3	22.9	23.7	23.0	23.2	-0.15	1.7	0.4	23.7	0.24	1.7	0.6	16	LY
YJCQV9	22.0 L	22.1	22.1	22.9	22.3	-0.89	1.4	0.4	22.5	-0.94	1.4	0.6	12	LW
YY4QGG	23.9	24.0	23.0	25.7	24.2	0.64	2.0	1.1	24.6	1.13	1.9	1.3	16	LH

Consensus (All Labs) Results

Wk Mean	23.43	23.43	23.40	23.58	Month Mean	23.37	Grand Mean	23.42
Avg SDr	1.76	1.69	1.76	1.73	Avg SD	1.73	Avg SD	1.73
SD btwn Labs	1.50	1.39	1.44	1.39	SD btwn Labs	1.23	SD btwn Labs	1.01
Labs Incld	56	54	55	56	SD btwn Wks	0.64	SD btwn Wks	0.73
Labs Excld	0	1	1	0	Labs Incld	54	Labs Incld	52
Labs not Rcvd	0	1	0	0				

Analysis Notes

PPR8BE - Data appears to be switched between Analysis 223 and Analysis 224. Data switched by CTS.

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	DW	Dongguan Walter W-304 Tester
LA	L&W Autoline	LH	L&W 282
LU	L&W 52 without moisture correction(was 53)	LW	L&W 53 with moisture correction (was 53M)
LY	L&W 152 without moisture correction	LZ	L&W (model not specified)
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab

	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
26ZARB	31.3	30.5	30.8	30.5 *	30.8	-1.97 *	2.7	0.4	27.7	-4.55 X	2.6	8.1 H	12	LZ
2NV3D9	34.5 L	34.6 L	34.4 L	34.2 L	34.4	-0.28	1.3	0.2 L	34.0	-0.57	1.3	0.4 L	12	TT
2WUFJ4	33.8 L	34.0	32.3 L	31.3	32.8	-1.02	1.8	1.3	32.6	-1.40	1.9	1.1	12	BK
36L37U	33.7	35.3	34.5	34.6	34.5	-0.25	2.4	0.7	34.7	-0.08	2.3	0.8	12	LZ
3NBLW7	33.4	31.0	32.0	32.6	32.2	-1.29	2.2	1.0	33.1	-1.13	2.3	1.1	12	LH
4GNAZG	32.1	34.9	35.7	35.4 H	34.5	-0.24	3.6	1.7	34.5	-0.19	3.6	1.7	4	LU
4WYRA4	36.3	36.7	37.9	36.3	36.8	0.78	2.6	0.8	36.9	1.33	2.5	0.7	12	LH
6HWMFX	31.2 L	31.7	31.2 L	31.6 L	31.4	-1.67	1.4	0.3	34.7	-0.06	1.6	3.6 H	8	DW
73KL48	33.4	33.1	33.0	34.9	33.6	-0.67	2.8	0.9	34.3	-0.36	4.1	1.1	7	LH
7EXLZZ	32.6	34.2	33.6	35.2 L	33.9	-0.52	2.1	1.1	34.3	-0.31	2.5	1.2	12	LW
8CL77Z	33.5	32.8	33.8 H	32.0	33.0	-0.95	3.0	0.8	33.5	-0.85	8.4	0.8	8	LA
8FKP27	34.6	35.0	34.3	32.4	34.1	-0.44	2.9	1.2	34.0	-0.54	2.9	0.8	12	LA
8JHAN3	34.8 L	34.8 L	34.6 L	34.4 L	34.7	-0.19	1.4	0.2	34.0	-0.54	1.3	0.6	12	TT
8WQQXT	35.8	36.6	35.8	37.3	36.4	0.59	3.4	0.7	35.8	0.60	3.0	0.8	12	LA
9DCRCV	36.5	34.3	33.3	32.6	34.2	-0.40	3.1	1.7	33.3	-0.95	2.7	1.3	12	LW
9XYFJ3	36.6	37.2	37.4	39.1	37.6	1.16	2.9	1.1	36.2	0.86	3.3	1.4	12	LA
A8Z6UC	35.4 L	32.8	35.4	35.7 L	34.8	-0.11	2.5	1.3	34.9	0.01	2.2	1.1	12	LA
AYQYY9	38.4 H	39.5	37.6	38.5	38.5	1.58	3.6	0.8	37.0	1.42	3.3	1.6	12	LU
B29D3A	39.9 *L	38.1 L	34.5 L	37.7 L	37.5	1.13	0.0	2.2 H	36.3	0.92	0.0	2.6	6	LZ
B4YE8X	35.0	34.6	34.5	36.6	35.2	0.05	2.8	1.0	35.9	0.70	2.9	1.2	11	LW
BKL28U	33.7	34.2	34.2	35.0	34.3	-0.37	2.7	0.5	34.6	-0.14	2.7	0.8	8	LU
C66JXQ	35.9	34.8	34.7	33.7	34.8	-0.13	2.5	0.9	34.4	-0.30	2.6	0.9	12	LA
CMAVNV	39.8 *	39.5	37.0	38.5	38.7	1.67	3.2	1.3	36.9	1.33	3.3	1.9	12	LZ
CWEMDP	35.1	34.6	35.8	35.0	35.1	0.04	2.6	0.5	34.9	0.06	2.7	0.5	12	LU
E4688F	37.0	36.4	40.9 *	36.8	37.8	1.24	3.0	2.1	35.6	0.50	2.8	2.7	12	LA
E874YV	37.2 H	35.2 H	36.2	35.2 H	35.9	0.40	3.9	1.0	35.0	0.08	3.7	1.4	12	LU
EUXBLX	32.0	33.1	32.5	34.1	32.9	-0.97	2.9	0.9	33.3	-1.00	3.0	1.3	11	LZ
EYTWG8	37.1	39.7 *H	38.4	37.6	38.2	1.43	3.0	1.1	38.2	2.15 *	3.0	1.1	4	LH
GGNA3D	34.6	34.6	35.1	35.1	34.9	-0.09	2.5	0.3	35.0	0.09	2.6	0.6	12	LU
GR82BM	33.0	34.0	29.4 *H	34.7	32.8	-1.05	3.6	2.3 H	33.2	-1.07	3.0	1.4	12	LZ
HHXVXW	34.0	33.9 L	34.0	36.0	34.5	-0.27	2.2	1.0	33.2	-1.04	2.5	1.5	12	LA
JJMKVH	32.3	31.6	32.3	30.8	31.8	-1.51	2.7	0.7	32.1	-1.77	2.6	0.8	12	LY
K4KGKN	35.1	34.5	34.8	34.2	34.6	-0.19	2.0	0.4	35.5	0.41	2.4	0.8	12	LY
KNDD7P	34.6	34.5	33.4	33.2	33.9	-0.52	2.2	0.7	34.4	-0.29	2.6	0.6	12	LY
KZQE3H	37.4 H	34.7	34.5	35.1 L	35.4	0.17	3.2	1.4	34.4	-0.30	2.9	1.2	12	LW

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 56 lb Linerboard - 56A2

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
L6B3RK	36.5	37.2	35.1	36.9	36.4	0.63	3.0	0.9	33.9	-0.59	2.7	6.9 H	12	LA
LD9MXM	34.6	34.7	34.4	34.7	34.6	-0.21	2.6	0.1 L	34.5	-0.21	2.5	0.2 L	12	LA
MHUZCF	41.6 X	41.3 *	39.9	41.1 *	41.0	2.71 *	3.2	0.7	38.9	2.57 *	3.1	2.4	8	LA
MPGTNE	36.4 L	36.4 L	35.6 L	36.1 L	36.1	0.49	0.0	0.4	35.5	0.41	0.0	1.8	12	LA
NGGUAB	33.5	No Data	34.3	35.1 L	34.3	-0.37	2.5	0.8	33.3	-0.96	2.9	1.0	11	XX
NKG2TM	32.5	31.3 L	30.7	32.5	31.8	-1.52	2.3	0.9	32.0	-1.82	2.6	0.8	12	LU
NTXDAU	38.2	37.3	40.3 *H	39.6	38.8	1.73	3.5	1.4	37.7	1.83	3.3	1.2	12	LU
P97TQV	38.0	40.0 *	40.1 *L	37.5	38.9	1.75	2.8	1.3	38.0	2.00 *	2.8	1.4	8	LA
PPR8BE	34.4	32.4 H	34.7 H	37.0 H	34.6	-0.20	5.1	1.9	34.8	-0.01	3.7	1.6	12	XX
R9U3B9	34.4	33.6	34.8	34.4 L	34.3	-0.35	2.6	0.5	34.5	-0.22	2.7	1.0	12	LA
R9WTKC	32.1 L	33.0 L	31.4 L	31.4	32.0	-1.41	1.7	0.8	32.7	-1.35	1.7	1.9	12	LA
RP2ZYD	34.3	33.0	33.5	34.4	33.8	-0.59	2.7	0.7	33.5	-0.88	2.1	0.6	12	LU
UHXRBP	38.2	37.3	40.3 *H	39.6	38.8	1.73	3.5	1.4	37.7	1.83	3.3	1.2	12	LU
URJYAE	34.7	34.5	35.5	33.0	34.4	-0.29	2.5	1.0	34.6	-0.12	2.6	0.9	12	LA
VJNDGK	34.0	34.6	36.1	35.3	35.0	-0.03	2.5	0.9	34.8	-0.01	3.0	0.8	12	LA
VWPUK2	39.1	36.8	37.7	37.3 H	37.7	1.23	2.7	1.0	41.6	4.30 X	3.1	7.7 H	12	LZ
WNCKAD	39.2 H	50.4 X	40.4 *	36.3	41.6	2.98 X	3.3	6.2 H	39.5	3.01 X	3.5	7.4 H	11	LA
X4J2W7	36.4	35.9	36.0	36.0	36.1	0.47	2.9	0.2	35.9	0.69	2.6	0.4 L	12	ID
Y38GPG	33.8	34.9	35.6	34.7	34.8	-0.14	2.9	0.7	34.5	-0.20	5.0	0.8	12	LU
YJCQV9	33.4	31.5	32.2	34.2	32.8	-1.03	2.5	1.2	33.4	-0.91	2.6	1.1	8	LW
YY4QGG	35.6	36.6	33.8	36.7 H	35.7	0.28	3.3	1.3	35.5	0.42	3.2	1.2	12	LH

Consensus (All Labs) Results

Wk Mean	35.11	34.98	35.04	35.21	Month Mean	35.06	Grand Mean	34.84
Avg SDr	2.85	2.90	2.87	2.72	Avg SD	2.83	Avg SD	3.05
SD btwn Labs	2.17	2.37	2.61	2.32	SD btwn Labs	2.18	SD btwn Labs	1.56
Labs Incld	55	54	56	56	SD btwn Wks	1.08	SD btwn Wks	1.63
Labs Excld	1	1	0	0	Labs Incld	55	Labs Incld	53
Labs not Rcvd	0	1	0	0				

Analysis Notes

PPR8BE - Data appears to be switched between Analysis 223 and Analysis 224. Data switched by CTS.

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	DW	Dongguan Walter W-304 Tester
ID	IDM Compression Tester	LA	L&W Autoline
LH	L&W 282	LU	L&W 52 without moisture correction (was 53)
LW	L&W 53 with moisture correction (was 53M)	LY	L&W 152 with 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		

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
36L37U	176.8	0.49	8.68		178.8	0.71	4.73	4	EV
73KL48	126.4	-1.79	9.26		113.3	-2.35 *	10.31	4	EV
7EXLZZ	171.7	0.26	19.68		173.6	0.47	2.13	4	LA
8CL77Z	216.9	2.30 *	32.73	H	203.4	1.85	15.97	3	LA
8DTPLM	140.1	-1.17	13.58		134.1	-1.37	6.96	3	EV
8FKP27	161.5	-0.20	13.45		142.3	-0.99	27.07	2	LA
8WQQXT	160.7	-0.24	14.52		156.1	-0.35	13.36	4	LA
9DCRCV	169.7	0.17	10.99		166.5	0.13	3.75	4	XX
9XYFJ3	162.3	-0.17	21.29		159.2	-0.21	3.57	4	LA
AYQYY9	166.9	0.04	14.80		172.5	0.41	12.81	4	EV
BKL28U	166.2	0.01	14.55		171.7	0.38	7.75	2	XX
DK2XWY	178.8	0.58	26.22		172.5	0.41	5.06	4	LS
E6F6KX	147.3	-0.85	8.90		149.4	-0.66	2.20	4	EV
E874YV	189.2	1.05	8.47		187.8	1.12	2.08	4	EV
EUXBLX	0.3	-7.48 X	0.02	L	0.3	-7.61 X	0.01	L 3	LA
GR82BM	164.8	-0.05	18.23		166.6	0.14	6.65	4	LA
HHXVXW	189.7	1.07	19.81		176.1	0.58	9.55	4	EV
JJMKVH	184.3	0.83	15.33		175.4	0.55	6.28	4	EV
KZQE3H	162.1	-0.17	15.10		165.5	0.09	4.98	4	EV
L6B3RK	168.7	0.12	9.18		173.6	0.46	7.49	4	LA
LD9MXM	162.6	-0.15	15.11		162.3	-0.06	0.54	L 4	XX
MHUZCF	132.9	-1.49	21.05		139.7	-1.12	5.40	4	LA
MPGTNE	165.8	-0.01	20.90		193.2	1.38	31.08	H 4	LA
NTXDAU	156.9	-0.41	13.76		151.6	-0.56	7.43	4	EV
URJYAE	142.4	-1.06	13.55		142.4	-0.99	0.00	1	LS
VWPUK2	205.0	1.76	29.83	H	176.2	0.59	19.34	4	XX
WNCKAD	189.7	1.07	28.21		191.7	1.31	2.81	2	LA
YY4QGG	122.4	-1.97 *	13.82		122.1	-1.93 *	0.32	2	EV

Consensus (All Labs) Results

Month Mean	165.98	Grand Mean	163.61
Avg SD	17.92	Avg SD Months	11.30
SD btwn Labs	22.15	SD btwn Labs	21.47
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
8FKP27	351.8	-0.84	11.18		354.4	-1.34	5.30	3	LA
94JK9W	275.5	-11.48 X	6.43		279.1	-14.72 X	16.69 H	4	XX
C66JXQ	359.2	0.19	12.87 H		363.8	0.32	4.55	4	LA
CMAVNV	361.6	0.53	7.54		366.9	0.89	8.92	4	XX
CWEMDP	359.0	0.16	6.98		368.8	1.22	12.75	4	XX
DK2XWY	355.5	-0.33	8.41		360.8	-0.20	7.72	4	LA
E4688F	366.1	1.15	6.98		365.7	0.67	6.14	4	XX
NGGUAB	365.0	1.00	5.27		364.7	0.48	3.56	4	PP
R9U3B9	368.5	1.49	9.10		367.7	1.03	5.09	4	XX
TQ9XMF	354.2	-0.51	6.51		354.5	-1.33	4.25	4	LA
URJYAE	348.0	-1.36	4.71		354.0	-1.41	8.52	4	LA
VJNDGK	365.1	1.01	7.37		368.1	1.09	8.83	4	LA
XBLVB8	347.8	-1.40	5.61		356.5	-0.96	6.83	4	XX
YY4QGG	350.0	-1.09	6.46		359.5	-0.44	11.66	3	LA

Consensus (All Labs) Results

Month Mean	357.83	Grand Mean	361.95
Avg SD	7.93	Avg SD Months	7.74
SD btwn Labs	7.17	SD btwn Labs	5.63
Labs Incld	13	Labs Incld	13

Key to Instrument Codes Reported by Participants

LA L & W Roughness Sheffield - Autoline

PP Technidyne Profile/Plus

XX Instrument make/model not specified by lab

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
36L37U	105.0	0.10	5.86		100.2	-0.66	8.08	4	XX
7EXLZZ	114.6	1.13	9.13		124.5	1.20	6.74	4	HY
8CL77Z	113.0	0.96	18.91	H	135.4	2.03 *	26.46	3	SC
8DTPLM	120.6	1.78	5.81		122.4	1.04	2.62	3	HY
9B3NFY	104.6	0.05	4.67		111.2	0.18	35.52 H	4	TM
AYQYY9	60.2	-4.73 X	3.11		62.1	-3.57 X	2.46	4	TM
BKL28U	109.6	0.59	11.72		104.9	-0.30	3.61	4	TM
C66JXQ	93.3	-1.17	7.71		95.8	-0.99	4.02	4	SC
CWEMDP	110.6	0.70	6.14		113.3	0.35	3.58	4	HY
DK2XWY	104.4	0.03	10.14		108.5	-0.03	4.59	4	HY
E4688F	88.6	-1.67	3.85		108.8	0.00	22.84	4	SC
E874YV	96.6	-0.81	3.44		92.5	-1.24	4.31	4	TM
ET6CDQ	99.0	-0.55	7.72		100.8	-0.61	3.62	4	SC
GGNA3D	98.2	-0.63	6.42		104.0	-0.37	4.24	4	HZ
HHXVXW	100.2	-0.42	7.19		108.3	-0.04	6.70	4	TM
MHUZCF	102.0	-0.23	11.51		122.5	1.05	14.75	4	SC
NGGUAB	116.6	1.35	5.18		116.3	0.58	1.81 L	3	HY
NTXDAU	92.6	-1.24	5.13		95.6	-1.01	2.82	4	TM
PPR8BE	119.9	1.70	28.39	H	88.8	-1.53	29.53 H	4	SC
R9U3B9	92.6	-1.24	2.70		96.7	-0.93	3.12	4	TM
R9WTKC	99.4	-0.51	3.58		98.0	-0.82	1.48 L	4	TM
URJYAE	135.9	3.43 X	6.04		135.9	2.07 *	0.00	1	TM
VJNDGK	48.9	-5.94 X	0.67	L	46.4	-4.77 X	2.69	4	LZ
VWPUK2	104.6	0.05	6.69		109.2	0.03	10.48	4	TM

Consensus (All Labs) Results

Month Mean	104.09	Grand Mean	108.79
Avg SD	10.01	Avg SD Months	13.77
SD btwn Labs	9.28	SD btwn Labs	13.08
Labs Incld	21	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	103.41	9.52	0.68	18
Modified Scott Bond Mechanics	112.60	2.83	8.51	2

Analysis Notes

VJNDGK - 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
36L37U	25.8	-0.10	1.79		26.1	-0.25	1.57		4
3NBLW7	27.8	0.51	3.27		30.5	2.08 *	2.12		4
7EXLZZ	31.2	1.55	5.22	H	25.7	-0.46	3.68		4
8CL77Z	29.9	1.14	5.37	H	27.3	0.36	4.12		3
8FKP27	27.6	0.45	5.03	H	28.6	1.07	1.74		4
8WQQXT	26.2	0.01	3.80		27.6	0.53	1.25		3
9DCRCV	24.0	-0.66	1.87		24.9	-0.88	1.98		4
AYQYY9	28.0	0.57	0.79		27.1	0.26	1.13		4
B4YE8X	24.8	-0.41	2.59		24.5	-1.09	0.77		4
BKL28U	27.0	0.26	2.92		28.2	0.86	1.70		2
CMAVNV	31.5	1.64	2.69		28.9	1.22	1.96		4
CWEMDP	24.6	-0.46	1.60		24.9	-0.90	0.45		4
E4688F	29.4	1.00	1.14		28.7	1.09	0.50		4
E874YV	30.8	1.43	0.84		27.8	0.63	4.16		4
ET6CDQ	22.2	-1.21	1.92		22.8	-1.97 *	0.46		4
GR82BM	24.4	-0.53	0.55	L	24.1	-1.30	1.09		4
HHXVXW	26.0	-0.04	2.00		28.2	0.83	1.94		4
JJMKVH	32.1	1.84	0.59	L	29.2	1.39	2.04		4
KZQE3H	26.0	-0.04	1.41		26.2	-0.22	2.13		4
LD9MXM	26.0	-0.04	0.71		26.5	-0.04	0.48		4
MBFYEQ	24.8	-0.41	2.95		26.7	0.07	2.69		2
MHUZCF	18.8	-2.25 *	0.84		20.4	-3.27 X	1.54		4
NGGUAB	26.8	0.20	1.44		25.4	-0.60	1.52		3
NTXDAU	28.8	0.82	4.96		26.9	0.17	2.34		4
R9U3B9	26.9	0.24	1.64		27.8	0.64	0.77		4
U4V4GA	25.0	-0.35	0.71		25.0	-0.83	0.00		1
UHXRBP	21.2	-1.52	1.35		25.8	-0.39	3.12		4
URJYAE	23.4	-0.84	2.36		23.4	-1.67	0.00		1
VJNDGK	20.8	-1.64	0.43	L	27.6	0.54	4.89	H	4
VWPUK2	21.7	-1.36	2.96		23.3	-1.71	1.44		4
YY4QGG	26.8	0.20	2.59		27.7	0.57	2.46		4

Consensus (All Labs) Results

Month Mean	26.14	Grand Mean	26.57
Avg SD	2.63	Avg SD Months	2.27
SD btwn Labs	3.26	SD btwn Labs	1.90
Labs Incld	31	Labs Incld	30

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
36L37U	17.2	-1.59	1.40		18.9	-0.06	1.57	4	LP
3NCAKC	20.0	1.11	1.79		19.4	0.40	0.92	4	LP
3VVGZV	18.9	0.04	2.77	H	18.4	-0.60	1.59	4	GG
7EXLZZ	22.3	3.38 X	2.24		20.6	1.50	1.25	4	LP
8CL77Z	18.4	-0.41	1.77		18.6	-0.36	0.75	3	LA
8FKP27	17.1	-1.71	2.00		17.2	-1.68	0.70	3	LA
9XYFJ3	19.1	0.25	0.89		18.3	-0.62	0.97	4	LA
AYQYY9	18.5	-0.39	2.22		18.5	-0.46	0.80	4	LA
B4YE8X	19.2	0.33	2.04		20.8	1.65	4.39 H	4	LP
BBJENA	20.9	1.94 *	3.52	H	20.1	0.99	1.02	4	GA
BKL28U	20.7	1.78	1.18		21.1	1.99 *	0.62	2	LA
C66JXQ	19.9	1.05	2.09		19.4	0.37	0.70	4	LA
CMAVNV	20.7	1.77	2.39		20.1	1.02	1.63	4	GA
CWEMDP	18.4	-0.41	2.04		18.1	-0.85	0.49	4	TP
D89CQ4	18.5	-0.35	1.18		18.3	-0.62	1.92	4	XX
DK2XWY	18.1	-0.76	0.21	L	18.2	-0.73	0.09 L	4	LP
GR82BM	18.5	-0.39	1.24		21.0	1.89	6.64 H	4	LP
HHXVXW	18.9	0.04	0.73	L	18.5	-0.41	0.59	4	LP
K4KGKN	19.3	0.43	0.48	L	19.1	0.12	0.90	4	LP
KZQE3H	19.4	0.53	1.35		18.9	-0.13	0.44	4	XX
LD9MXM	18.3	-0.51	1.01		18.8	-0.21	0.80	4	LA
MBFYEQ	17.8	-1.05	0.90		18.3	-0.66	0.71	2	LP
MHUZCF	17.2	-1.61	2.15		16.4	-2.43 *	1.20	4	LA
MPGTNE	23.1	4.15 X	1.68		20.6	1.49	2.47	4	LA
NGGUAB	19.2	0.31	2.40		18.6	-0.36	0.81	4	TP
NTXDAU	19.2	0.34	1.11		19.4	0.34	0.77	4	LA
Q88ZCN	19.0	0.10	1.15		18.4	-0.55	0.56	4	LP
R9U3B9	19.2	0.34	1.54		18.5	-0.50	0.76	4	LA
UC7NGK	17.6	-1.26	1.62		18.3	-0.65	0.88	4	TL
UHXRBP	17.5	-1.29	1.18		18.5	-0.49	0.80	4	LA
URJYAE	18.8	-0.03	1.04		19.0	-0.01	0.95	4	LA
VJNDGK	20.8	1.89	1.57		20.7	1.58	0.46	4	LA
VWPUK2	18.9	0.05	1.19		19.1	0.11	1.91	4	TD
WNCKAD	19.3	0.40	1.77		18.8	-0.17	0.64	2	LA
YY4QGG	17.9	-0.94	0.67	L	18.0	-0.88	0.32	3	LP

Containerboard Interlaboratory Testing Program

Analysis 237

Air Resistance, 42 lb Linerboard - 42D

TAPPI Official Test Method T460

Consensus (All Labs) Results

Month Mean	18.86	Grand Mean	18.99
Avg SD	1.68	Avg SD Months	1.70
SD btwn Labs	1.03	SD btwn Labs	1.08
Labs Incld	33	Labs Incld	35

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision #4320 Densometer
LA	L&W Autoline	LP	L&W Air Permeance Tester SE 166
TD	TMI Gurley Densometer	TL	Teledyne Gurley Densometer #4110, Oil Flotation
TP	Technidyne Profile/ plus Roughness & Porosity	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2NV3D9	60.2	58.8	59.8	58.5	59.3	0.60	3.7	0.8	59.0	0.39	3.8	0.9	8	TJ
36L37U	59.2	59.0	58.7	59.5	59.1	0.53	3.9	0.3	58.5	0.22	3.8	0.9	8	LD
3NBLW7	55.9	54.4	54.8	52.3	54.4	-1.31	3.3	1.5	55.2	-0.88	3.8	1.7	8	LD
3NCAKC	60.8	59.2	58.8	58.3	59.3	0.58	3.1	1.1	58.2	0.13	3.1	1.9	8	LD
4BL2UN	61.4	60.4	60.6	60.3 L	60.7	1.11	1.7	0.5	61.2	1.10	1.8	0.7	8	TU
4GNAZG	63.5 *	61.3	63.1 *	64.5 *	63.1	2.06 *	3.9	1.3	63.5	1.86	3.7	1.1	8	LC
4WYRA4	58.3	60.7	60.4	59.7	59.8	0.78	3.7	1.1	58.6	0.25	3.6	1.9	8	LD
6HWMFX	58.6	61.1	64.0 *	64.9 *	62.1	1.69	3.5	2.9 H	62.4	1.52	2.6	2.2	8	TD
7EXLZZ	56.3	56.3	53.8	54.4	55.2	-0.98	3.2	1.3	56.0	-0.61	3.2	1.6	8	LD
8FKP27	61.6	59.4	58.4	57.6	59.3	0.57	3.8	1.7	60.3	0.80	3.8	1.7	8	LD
8JHAN3	56.0	58.2	57.4	58.2	57.5	-0.12	4.2	1.1	57.4	-0.14	4.4	1.3	8	TG
9T97A4	58.4 L	58.4 L	58.3 L	58.1 L	58.3	0.20	1.1	0.1 L	59.3	0.50	1.2	1.1	8	LD
A7997H	61.0	59.2	60.6	64.2	61.2	1.34	4.5	2.1	64.1	2.08 *	4.5	3.8	8	MB
AYQYY9	57.9	57.5	58.8	54.1	57.1	-0.27	3.0	2.1	55.9	-0.63	3.2	2.0	8	XX
B29D3A	53.2	55.1	55.4	56.2	55.0	-1.08	3.5	1.3	55.2	-0.86	3.6	0.9	8	EM
B4YE8X	61.3	61.1	62.5	59.8 L	61.2	1.31	2.7	1.1	62.3	1.49	3.4	2.1	7	LD
BJDKGB	48.0 X	47.2 X	48.4 X	47.8 *	47.9	-3.82 X	4.0	0.5	47.3	-3.48 X	4.0	1.0	8	TC
BKL28U	56.3	58.0	59.1	58.0	57.8	0.02	4.1	1.1	57.6	-0.07	4.0	1.2	8	LC
CMAVNV	55.8	56.4	58.5	55.0	56.4	-0.52	3.4	1.5	57.7	-0.04	3.1	1.7	8	LZ
CWEMDP	58.4	56.6	61.0	58.4	58.6	0.32	4.1	1.8	58.5	0.23	4.4	1.9	8	LC
DNZCJN	58.6	58.2	57.7	57.6	58.0	0.10	3.1	0.5	58.8	0.31	3.0	0.9	8	LD
E874YV	58.2	No Data	No Data	No Data	58.2	0.16	3.8	0.0	55.8	-0.66	3.2	1.4	5	LD
EJYMFM	57.6	56.8	57.1	57.8	57.3	-0.17	3.4	0.5	58.6	0.25	3.1	1.5	8	LC
ET6CDQ	57.6	56.6	56.4	55.5	56.5	-0.48	3.2	0.9	56.5	-0.44	3.3	0.9	8	LZ
EUXBLX	57.5	55.5	54.9	58.2	56.5	-0.48	4.3	1.6	55.1	-0.89	3.8	2.2	8	LD
EYTWG8	52.9	52.8 *	53.4 H	49.6 *	52.2	-2.15 *	4.1	1.7	50.7	-2.36 *	3.5	2.1	8	LD
GGNA3D	56.8	55.4	55.9	56.4	56.1	-0.64	3.4	0.6	55.2	-0.85	3.4	1.3	8	LC
GR82BM	61.2	60.0	57.2	57.6	59.0	0.47	3.4	1.9	58.6	0.27	4.4	1.9	8	LZ
H4CGUX	58.6	56.7	57.7	57.3	57.6	-0.06	3.8	0.8	59.3	0.50	3.8	2.1	8	EM
JJMKVH	56.0	57.1	56.7	57.4	56.8	-0.37	3.5	0.6	57.0	-0.28	3.3	1.3	8	EN
KNDD7P	60.0	61.7 L	56.9	55.1	58.4	0.26	3.6	3.0 H	58.9	0.35	3.7	2.2	8	LD
L6B3RK	52.8	54.9	54.8	58.5	55.2	-0.97	4.3	2.4	55.4	-0.81	4.1	1.9	8	MB
LD9MXM	57.6	58.7 L	58.3	58.1	58.2	0.16	1.9	0.5	58.3	0.17	2.1	0.4 L	8	LD
MPGTNE	52.7	55.3	51.4 *	52.0	52.9	-1.89	5.1	1.7	55.4	-0.81	5.8	3.4	8	TU
MR3CQX	60.2	60.8	60.1	60.9 L	60.5	1.05	2.9	0.4	60.7	0.94	2.6	0.6	8	LD

Containerboard Interlaboratory Testing Program

Analysis 240

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

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
NGGUAB	57.9	No Data	57.6	57.9	57.8	0.02	4.6	0.2 L	58.6	0.24	4.1	1.6	6	LD
NKG2TM	56.5	58.3	57.6	58.0	57.6	-0.06	3.5	0.8	56.4	-0.48	3.3	1.5	8	TH
NTXDAU	57.9	57.5	58.8	54.1	57.1	-0.27	3.0	2.1	55.9	-0.63	3.2	2.0	8	LC
P7XF79	57.8	60.2	59.0	56.5	58.4	0.24	4.5	1.6	57.2	-0.20	4.1	1.7	8	LC
PPR8BE	52.8	57.1	56.3	50.9	54.3	-1.34	2.7	2.9 H	54.3	-1.16	3.2	2.1	8	LC
Q88ZCN	58.1	57.4	58.0	59.5	58.3	0.19	4.2	0.9	58.0	0.05	4.1	1.4	8	LD
R9WTKC	58.2	59.3	58.5	58.5	58.6	0.33	3.2	0.5	59.5	0.54	2.9	1.1	8	LC
RKQ6WP	63.6 *	65.6 X	63.0	64.9 *	64.3	2.51 *	4.2	1.2	65.2	2.43 *	4.3	1.7	8	LC
RP2ZYD	57.3	56.1	56.2	59.6	57.3	-0.18	3.3	1.6	57.6	-0.08	3.1	1.9	8	LZ
VJNDGK	51.5 *	51.5 *	54.4	51.5	52.2	-2.13 *	4.1	1.5	51.7	-2.03 *	3.6	1.5	8	LD
WNCKAD	52.6	54.3	52.9	52.9	53.2	-1.76	4.9	0.8	50.3	-2.48 *	4.3	7.4 H	7	MB
WNUBJX	60.1	60.7	60.5	60.4	60.4	1.03	2.9	0.2 L	60.5	0.89	2.7	0.2 L	8	LD
X4J2W7	58.2	57.5	57.4	57.7	57.7	-0.03	2.9	0.4	58.1	0.08	3.2	0.7	8	LD
Y38GPG	57.5	56.1	56.2	57.1	56.7	-0.40	3.6	0.7	57.3	-0.16	3.8	1.1	8	LD

Consensus (All Labs) Results

Wk Mean	57.76	57.72	57.85	57.32	Month Mean	57.76	Grand Mean	57.83
Avg SDr	3.77	3.57	3.50	3.57	Avg SD	3.62	Avg SD	3.58
SD btwn Labs	2.81	2.35	2.70	3.65	SD btwn Labs	2.60	SD btwn Labs	3.03
Labs Incld	48	45	47	48	SD btwn Wks	1.41	SD btwn Wks	1.99
Labs Excld	1	2	1	0	Labs Incld	48	Labs Incld	48
Labs not Rcvd	0	2	1	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200 Series
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TC	TMI Monitor/Compression Tester, 17-37	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 250

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

TAPPI Official Test Method T843

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2WUFJ4	67.2 H	67.9	68.6	66.1	67.4	-0.38	4.3	1.1	66.4	-0.95	3.9	1.5	8	LD
3NCAKC	68.5	66.0	68.2	66.9	67.4	-0.40	3.4	1.2	67.6	-0.39	3.0	2.2	8	LD
6HWMFX	67.2	70.1	66.5	67.9	67.9	-0.21	3.7	1.5	69.4	0.50	2.7	2.1	8	TD
7EXLZZ	71.8	74.4	72.7 *	72.7	72.9	1.61	4.0	1.1	72.7	2.04 *	3.8	1.6	8	LD
94JK9W	65.6	66.9	67.6	64.9	66.2	-0.81	3.3	1.2	66.7	-0.80	3.1	1.9	8	TH
9T97A4	69.4 L	69.5 L	69.0 L	69.3 L	69.3	0.30	1.0	0.2 L	71.4	1.45	1.2	2.3	8	LD
A7997H	64.4	63.5	62.5 *	62.9	63.3	-1.87	2.7	0.8	64.8	-1.70	3.0	1.8	8	MB
B4YE8X	71.3	70.8	69.1	67.9	69.8	0.47	3.5	1.6	69.1	0.36	3.2	1.4	7	LD
BKL28U	64.3	65.7	64.9	65.4	65.1	-1.23	3.6	0.6	65.0	-1.57	3.3	1.2	8	LD
CWEMDP	69.6	70.0	69.0	71.8	70.1	0.60	3.0	1.2	69.5	0.54	3.2	1.6	8	LC
D89CQ4	68.3	68.2	68.4 L	64.9	67.5	-0.37	2.0	1.7	67.0	-0.67	2.3	1.2	8	LZ
EJYMFM	67.3	67.7	68.0	68.8	68.0	-0.19	3.2	0.6	70.6	1.04	3.6	2.9	8	LD
GR82BM	70.6	66.1	66.9 H	67.1	67.7	-0.28	5.3	2.0	68.1	-0.14	4.4	1.4	8	LZ
LD9MXM	69.2	69.2	69.4	69.0	69.2	0.26	2.3	0.2 L	69.9	0.72	2.5	0.7	8	LD
NGGUAB	68.6	No Data	70.7	68.9	69.4	0.33	3.6	1.2	69.1	0.33	3.3	1.4	6	LD
NTXDAU	71.7	75.9 *	75.6 X	78.3 X	75.4	2.51 *	3.6	2.7 H	67.9	-0.23	6.2	8.6 H	8	XX
Q88ZCN	71.9	71.7	71.3	72.1	71.7	1.19	4.1	0.3	70.2	0.88	4.0	2.2	8	LD
RP2ZYD	66.6	67.3	67.0	66.9	67.0	-0.55	3.5	0.3	67.9	-0.21	3.4	1.4	8	LZ
VJNDGK	68.9	69.9	67.6	69.2	68.9	0.15	4.2	1.0	68.8	0.21	4.0	2.3	8	LD
X4J2W7	65.0	65.4	65.8	65.2	65.4	-1.13	2.6	0.3	65.4	-1.40	2.3	0.7 L	8	LD

Consensus (All Labs) Results

Wk Mean	68.36	68.75	68.06	67.78	Month Mean	68.47	Grand Mean	68.37
Avg SDr	3.49	3.79	3.46	3.19	Avg SD	3.47	Avg SD	3.46
SD btwn Labs	2.42	3.09	2.30	2.63	SD btwn Labs	2.75	SD btwn Labs	2.12
Labs Incld	20	19	19	19	SD btwn Wks	1.22	SD btwn Wks	2.57
Labs Excld	0	0	1	1	Labs Incld	20	Labs Incld	20
Labs not Rcvd	0	1	0	0				

Key to Instrument Codes Reported by Participants

LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TD	TMI Digital Crush Tester, Model 17-09	TH	TMI Compression Tester, Model 17-76
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 255

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

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
3NCAKC	41.7	41.2	41.2	42.4	41.6	0.14	3.7	0.6	40.8	-0.52	3.7	1.4	8	LD
4BL2UN	35.6 L	36.4	37.8 L	36.9	36.7	-1.44	1.6	0.9	38.8	-1.49	1.6	2.4	8	TU
6B46A2	44.6	43.1	43.8	40.9	43.1	0.61	3.0	1.6	43.1	0.59	2.7	1.3	8	LD
6EWBKX	43.8	42.7	43.2	42.7	43.1	0.62	2.1	0.5	42.6	0.36	2.1	0.9	8	TH
A7997H	38.7	38.4	38.6	38.8	38.6	-0.82	2.5	0.2 L	36.7	-2.51 *	2.7	2.1	8	MB
B29D3A	39.9	40.1	41.0	41.8	40.7	-0.17	3.2	0.9	39.6	-1.11	3.2	1.4	8	EM
BJDKGB	33.3 *	33.6 *H	33.7 *	34.5 *H	33.7	-2.38 *	5.8	0.5	34.4	-3.66 X	5.8	0.9	8	TC
CMAVNV	41.1	41.7	41.8	43.1	41.9	0.23	2.9	0.9	42.0	0.08	2.7	0.8	8	LD
CWEMDP	44.5	45.3	43.1	45.0 L	44.5	1.05	1.9	1.0	43.7	0.87	2.5	1.9	8	LC
EUXBLX	40.5	41.8	41.0	40.2	40.9	-0.10	3.0	0.7	40.5	-0.67	3.2	1.1	8	LD
GGNA3D	40.3	42.3	43.7	43.2	42.4	0.37	2.6	1.5	41.7	-0.10	3.1	1.4	8	LD
H4CGUX	43.0 L	43.0	44.0	45.0	43.7	0.81	1.9	1.0	44.4	1.23	2.1	1.0	8	LC
KYEJFQ	42.1	39.8	40.9	43.1	41.5	0.09	2.9	1.5	41.1	-0.39	3.3	1.3	8	LZ
LD9MXM	41.7	42.2	42.2	42.0	42.0	0.27	2.2	0.2	42.5	0.31	2.3	0.6	8	LD
MR3CQX	42.7	42.0	42.2	42.9	42.5	0.41	3.1	0.4	42.3	0.23	2.7	0.3 L	8	LD
NGGUAB	42.2	No Data	45.8	44.1	44.0	0.90	4.0	1.8	44.0	1.05	3.8	1.3	6	LD
P7XF79	42.7	44.0	42.7	43.9	43.3	0.68	4.3	0.7	42.8	0.47	3.5	1.5	8	LC
Q88ZCN	40.3	43.6	43.5	42.8	42.5	0.43	2.2	1.5	42.3	0.22	2.2	1.5	8	LD
RKQ6WP	32.3 *	32.4 *	34.3 *	33.7 *	33.2	-2.57 *	3.1	1.0	32.4	-4.66 X	3.1	1.2	8	XX
RR7Q2M	42.1	41.6	39.7	41.1	41.1	-0.03	3.4	1.0	42.4	0.26	3.5	1.8	8	LZ
TQUBCR	39.5	40.0	39.4 H	41.5 H	40.1	-0.35	5.4	1.0	40.0	-0.91	5.4	0.8	8	TX
U24C3H	44.1 H	43.5 H	45.2	45.3	44.5	1.07	5.5	0.9	44.5	1.31	5.5	0.9	4	XX
VJNDGK	40.4	40.6	40.7	42.0	40.9	-0.09	3.3	0.7	41.9	0.00	3.2	1.2	8	LD
WNCKAD	35.7 H	37.7	38.8	38.4	37.7	-1.13	5.1	1.4	39.7	-1.09	4.7	4.7 H	7	MB
WNUBJX	45.3	45.4	45.7	45.9	45.6	1.41	3.2	0.3	45.6	1.81	3.1	0.2 L	8	LD

Consensus (All Labs) Results

Wk Mean	40.72	40.93	41.36	41.64	Month Mean	41.19	Grand Mean	41.87
Avg SDr	3.76	3.32	3.32	3.43	Avg SD	3.47	Avg SD	3.31
SD btwn Labs	3.41	3.28	3.09	3.13	SD btwn Labs	3.13	SD btwn Labs	2.04
Labs Incld	25	24	25	25	SD btwn Wks	1.00	SD btwn Wks	1.64
Labs Excld	0	0	0	0	Labs Incld	25	Labs Incld	23
Labs not Rcvd	0	1	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	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 #596 (E)
May 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
2NV3D9	14.4	14.3	14.2	13.9	14.2	2.00 *	0.8	0.2	14.0	1.39	0.9	0.3	8	TT
36L37U	13.1	14.2 H	13.6	14.0	13.7	0.90	1.1	0.5	13.4	0.28	2.7	0.5	8	LB
3NBLW7	12.6	12.6	12.8	12.4	12.6	-1.54	0.8	0.1	12.8	-0.94	0.9	0.3	8	LH
6HWMFX	13.1	13.4	13.1	13.0 H	13.2	-0.29	1.1	0.2	17.0	7.45 X	1.9	4.1 H	8	XX
8FKP27	12.2	14.1	13.4	13.4	13.3	-0.06	1.0	0.8 H	13.1	-0.31	1.1	0.6	8	LA
9T97A4	13.4 L	13.6 L	13.4 L	13.5 L	13.5	0.38	0.3	0.1	14.0	1.38	2.3	0.6	8	LA
A8Z6UC	13.3	13.1	12.6	13.6	13.1	-0.36	1.2	0.4	13.2	-0.12	1.1	0.4	8	LA
BJDKGB	12.9	12.6	12.9	13.2	12.9	-0.84	1.0	0.3	12.9	-0.75	0.9	0.2	8	TS
BKL28U	13.1	13.3	12.5	13.5	13.1	-0.44	1.0	0.4	13.0	-0.50	1.1	0.4	8	LU
CMAVNV	14.3	13.1	14.0	13.1	13.6	0.73	1.1	0.6	13.5	0.44	1.0	0.5	8	LZ
CWEMDP	13.7	13.6	13.4	13.7	13.6	0.73	1.1	0.1	13.4	0.26	1.1	0.3	8	LU
DNZCJN	13.8	14.1	13.5	13.1	13.6	0.69	0.8	0.4	14.1	1.60	0.8	0.6	8	LB
E874YV	14.1	14.2	14.0	14.3 *	14.1	1.83	1.2	0.1	14.2	1.80	1.2	0.3	8	LU
EJYMFM	13.9	13.7	14.0	13.0	13.6	0.74	0.7	0.4	14.0	1.40	0.8	0.5	8	LB
EUXBLX	13.2	13.4	13.1	13.7	13.3	0.10	1.1	0.2	13.0	-0.49	1.1	0.5	8	LZ
H4CGUX	11.6 *	12.6	12.5 L	12.8	12.4	-1.99 *	0.8	0.5	12.3	-1.94 *	0.8	0.7	8	LB
KYEJFQ	13.0	12.7	13.1	13.2	13.0	-0.62	1.0	0.2	12.8	-0.91	0.9	0.4	8	LA
L6B3RK	13.2	13.4	13.2	13.3	13.3	-0.04	1.0	0.1	13.0	-0.47	1.5	0.4	8	LA
LD9MXM	13.3	13.2	13.3 L	13.3	13.3	-0.07	0.7	0.1 L	13.3	-0.02	0.9	0.1 L	8	LB
MPGTNE	13.2 L	13.5 L	13.0 L	12.6 L	13.1	-0.42	0.0	0.4	13.0	-0.59	0.0	0.3	8	LA
NGGUAB	13.1 H	No Data	13.6	13.0	13.3	-0.10	1.4	0.3	13.2	-0.18	1.2	0.3	6	LB
NKG2TM	12.9 L	13.1 L	13.1	13.0	13.0	-0.59	0.7	0.1	13.2	-0.18	0.8	0.3	8	LH
TQUBCR	12.5	12.2 *	12.4	12.3 *	12.4	-2.04 *	1.1	0.1	12.4	-1.84	1.1	0.2	8	TT
URJYAE	13.5	13.6	14.2	13.7	13.7	0.96	0.9	0.3	13.6	0.64	0.9	0.3	8	LA
VJNDGK	13.6	13.4	13.4	13.4 H	13.5	0.34	1.1	0.1	13.3	0.03	1.1	0.3	8	LA
WNCKAD	14.6 *	19.3 XH	15.1 X	14.3 *	15.8	5.55 X	1.0	2.4 H	15.6	4.68 X	1.0	2.9 H	7	LA

Consensus (All Labs) Results

Wk Mean	13.29	13.38	13.29	13.31	Month Mean	13.29	Grand Mean	13.28
Avg SDr	0.98	0.98	0.97	0.93	Avg SD	0.98	Avg SD	1.23
SD btwn Labs	0.67	0.57	0.52	0.49	SD btwn Labs	0.46	SD btwn Labs	0.50
Labs Incld	26	24	25	26	SD btwn Wks	0.34	SD btwn Wks	0.41
Labs Excld	0	1	1	0	Labs Incld	25	Labs Incld	24
Labs not Rcvd	0	1	0	0				

Key to Instrument Codes Reported by Participants

LA	L&W Autoline	LB	L&W Model 152
LH	L&W 282	LU	L&W 52 without moisture correction (was 53)
LZ	L&W (model not specified)	TS	TMI Monitor/STFI Compression Tester, 17-33
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab

End of Report