Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #573 (F) - June 2017

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX11	Box Compression Strength, Corrugated Boxes
202	EC10	Edgewise Compressive Strength, Wax (T811), Corrugated Board
203	EC10	Edgewise Compressive Strength by Clamp (T839), Corrugated Board
205	42D2	Mullen Burst of Linerboard, 42 lb Linerboard
207	35E1	Mullen Burst of Linerboard, 35 lb Linerboard
215	42D2	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
217	35E1	Ring Crush of Linerboard, Rigid Platen Type, 35 lb Linerboard
223	42D2	STFI of Linerboard, 42 lb Linerboard
225	35E1	STFI of Linerboard, 35 lb Linerboard
228	56A	Roughness - Stylus Method, 56 lb Linerboard
229	42D3	Roughness - Sheffield Method, 42 lb Linerboard
231	42D	Internal Bond Strength, Linerboard, 42 lb Linerboard
234	42D	Coefficient of Static Friction - Inclined Plane, 42 lb Linerboard
237	42D	Air Resistance - Gurley Method, Linerboard, 42 lb Linerboard
240	CM91	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM91	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM91	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM91	STFI of Medium, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

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

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

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

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

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

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM91	October 2016-Current
	CM81	October 2015-September 2016
35 lb Linerboard	35E1	June 2017-Current
42 lb Linerboard	42D2	August 2016-Current
	42D1	April 2015-July 2016
56 lb Linerboard	56A1	July 2016-Current

ABOUT CTS

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

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EXPLANATION OF TABLES

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

Definitions of Terms Used

Weekly Results

Laboratory Data

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

Consensus Data

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

Monthly Results

Laboratory Data

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

Consensus Data

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

Cumulative Results

Laboratory Data

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

Consensus Data

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

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

Flag	Explanation

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

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

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

Flags assigned to Weekly Means:

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

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

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

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
2F4YPH	738.6	-0.16	45.84		744.7	-0.18	18.76	4	ES
3LQ42J	830.8	1.53	35.63		849.3	1.51	16.52	4	ER
6BJ64U	712.4	-0.64	83.34		712.4	-0.71	0.00	1	XX
6P4K8T	719.8	-0.50	30.97		766.4	0.17	47.78	4	LS
7RM2ZX	811.4	1.17	28.10		777.2	0.34	33.07	4	LG
97H3RP	858.8	2.04 *	47.15		869.2	1.84	18.98	4	TE
9Q6R3G	774.0	0.49	11.53 L		801.9	0.74	98.70 H	4	EX
AXJXCT	758.0	0.19	102.83 H		735.3	-0.34	22.62	4	LS
D2PPUH	697.0	-0.92	41.47		697.1	-0.96	20.92	4	LG
DWUZCP	841.0	1.72	13.87		872.8	1.90 *	25.14	4	LH
DZV42Q	660.4	-1.59	26.43		677.8	-1.27	12.81	4	TB
EERH2K	801.5	0.99	52.58		819.2	1.03	34.55	4	ET
H37KFY	760.0	0.23	13.83		753.5	-0.04	12.59	4	LG
HMVUL8	723.0	-0.45	37.08		756.2	0.00	27.89	4	LM
J26WK8	736.9	-0.19	25.15		791.4	0.57	109.47 H	4	ER
KAENNA	674.2	-1.34	83.61		656.9	-1.61	13.86	4	LL
KD33CJ	682.2	-1.19	17.08		722.9	-0.54	47.70	3	LH
PF6RH9	712.3	-0.64	96.77 H		775.7	0.32	58.87	4	LS
PTCHHV	705.5	-0.77	28.84		712.8	-0.70	18.51	4	ER
QJM9BD	770.4	0.42	67.66		773.3	0.28	5.77 L	3	EX
RAEYHT	725.6	-0.40	15.47		749.0	-0.12	37.05	4	ER
WULV66	551.2	-3.59 X	121.96 H		636.1	-1.95 *	58.19	4	EX
YR7CWJ	748.0	0.01	46.67		739.2	-0.28	23.88	4	LG

Consensus (All Labs) Results

Month Mean	747.34	Grand Mean	756.08
Avg SD	50.92	Avg SD Months	43.49
SD btwn Labs	54.60	SD btwn Labs	61.54
Labs Incld	22	Labs Incld	23

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	745.54	70.45	1.81	6
Clip sealing	740.64	41.99	6.71	15
Tape sealing	858.79	0.00	111.44	1

Key to Instrument Codes Reported by Participants

ER	Emerson 6200 Series	ES	Emerson 8510
ET	Emerson 7200	EX	Emerson Apparatus (Model not specified)
LG	TLS / L.A.B. Validator Series	LH	L.A.B. Compression Tester Model #10610
LL	Lansmont 76-5K	LM	Lansmont 122-15k
LS	Lansmont Squeezer	TB	TMI Monitor/Compression Tester, Model 17-70
TE	Testometric M500 - 25 KN	XX	Instrument make/model not specified by lab

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
6P4K8T	38.7	0.67	2.21		37.3	0.27	1.92	2	EM
AXJXCT	37.4	0.20	2.23		37.3	0.26	0.06	2	LC
BUFJ4U	35.5	-0.45	1.46		34.7	-0.67	1.13	2	WK
D2PPUH	38.3	0.52	1.54		38.3	0.61	0.00	1	XX
DWUZCP	34.8	-0.71	0.63	L	33.7	-1.04	1.50	2	TC
KD33CJ	40.9	1.45	1.10		40.9	1.57	0.00	1	EM
PF6RH9	34.3	-0.89	1.90		34.8	-0.66	0.71	2	EM
PTCHHV	34.5	-0.80	2.27		35.5	-0.39	1.39	2	EN
YR7CWJ	40.8	1.42	1.36		40.5	1.42	0.43	2	LE
ZJ934Z	32.8	-1.41	1.52		32.8	-1.38	0.00	1	XX

Consensus (All Labs) Results

Month Mean	36.79	Grand Mean	36.59
Avg SD	1.70	Avg SD Months	1.19
SD btwn Labs	2.82	SD btwn Labs	2.75
Labs Incld	10	Labs Incld	10

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LE	L&W Crush Tester 840
TC	TMI Monitor/Compression Tester, Model 17-37	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
2F4YPH	39.6	-0.37	1.32		38.7	-0.76	1.27	2	LD
3HALXG	43.8	1.10	1.90		43.8	1.26	0.00	1	LD
3LQ42J	40.0	-0.24	1.36		40.2	-0.20	0.22	2	EM
4E73GZ	43.5	0.98	1.46		44.2	1.41	1.02	2	TG
4RAQ9U	43.8	1.09	0.92		43.9	1.27	0.07	2	TB
67CGQR	37.7	-1.04	0.71		40.4	-0.12	3.75	2	LC
6P4K8T	46.4	2.02 *	1.66		45.7	2.02 *	1.00	2	EM
7MR83W	39.7	-0.34	0.97		39.6	-0.40	0.11	2	LD
7RM2ZX	41.3	0.20	1.53		40.7	0.03	0.76	2	EM
97H3RP	42.3	0.56	1.46		42.3	0.65	0.01	2	LD
9Q6R3G	37.9	-0.98	1.19		38.6	-0.81	1.05	2	LD
AXJXCT	42.3	0.57	0.84		42.1	0.59	0.23	2	LC
BME6KE	41.1	0.16	1.38		40.6	-0.01	0.72	2	LC
BUFJ4U	38.6	-0.74	1.30		37.1	-1.40	2.01	2	WK
BWL4TF	39.0	-0.58	1.73		37.0	-1.44	2.83	2	LD
D2PPUH	39.8	-0.33	0.70		39.8	-0.36	0.00	1	XX
DWUZCP	39.9	-0.26	1.02		39.3	-0.53	0.85	2	TX
DZV42Q	34.1	-2.31 *	0.54	L	34.7	-2.37 *	0.85	2	LD
E4TM24	40.8	0.03	2.37	H	40.5	-0.08	0.45	2	LD
EERH2K	41.8	0.38	1.03		42.3	0.66	0.78	2	TD
FT4DUL	39.7	-0.34	1.18		38.3	-0.95	2.05	2	EM
H37KFY	41.0	0.12	1.09		42.4	0.68	1.88	2	XX
H6WGBK	41.8	0.41	2.24		40.3	-0.13	2.12	2	TD
HMVUL8	41.8	0.41	1.59		42.9	0.90	1.52	2	TG
J26WK8	39.1	-0.55	1.17		39.5	-0.47	0.52	2	TB
K9NKU3	46.6	2.07 *	1.10		44.9	1.68	2.44	2	LC
KAENNA	38.6	-0.73	1.97		39.2	-0.60	0.80	2	LC
MT6JD3	41.6	0.33	1.55		41.6	0.39	0.03	2	XX
P7G3ET	40.0	-0.24	0.47	L	41.4	0.30	1.98	2	TD
PF6RH9	40.4	-0.09	1.09		40.4	-0.09	0.01	2	EM
PTCHHV	36.8	-1.36	2.42	H	36.9	-1.49	0.18	2	EX
QJM9BD	41.8	0.39	0.63		41.6	0.37	0.29	2	TL
RAEYHT	36.1	-1.62	1.33		37.0	-1.46	1.31	2	LD
TEGMC7	43.5	1.00	0.92		44.4	1.50	1.25	2	EM
UYKRE7	42.8	0.76	1.82		41.8	0.46	1.44	2	LD
W24NVV	38.9	-0.62	1.03		38.6	-0.80	0.36	2	LD
WULV66	35.9	-1.69	2.39	H	40.3	-0.15	6.26	2	CT
XHR282	47.4	2.35 *	0.58	L	44.0	1.34	4.75	2	TD
YR7CWJ	39.3	-0.48	1.99		38.5	-0.88	1.22	2	LY

Consensus (All Labs) Results

Month Mean	40.68	Grand Mean	40.66
Avg SD	1.43	Avg SD Months	1.86
SD btwn Labs	2.85	SD btwn Labs	2.51
Labs Incld	39	Labs Incld	39

Key to Instrument Codes Reported by Participants

CT	Con-Ten	EM	Emerson 1200 Series
EX	Emerson (model not specified)	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	TL	Tech-Lab Systems Compression
TX	TMI (model not specified)	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D2

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
276YFK	106.1	107.0	105.8 L	108.3	106.8	-0.49	5.3	1.1	107.6	-0.43	5.9	1.5	8	LA
2F4YPH	109.2	108.2	108.1	98.8 *	106.1	-0.68	12.0	4.9	106.8	-0.70	11.2	3.5	16	LA
37Y7YN	103.6	109.1	102.8	109.2	106.2	-0.66	10.8	3.4	106.4	-0.83	11.7	2.3	12	LC
4DE7UR	108.4	109.7	108.2	108.1 H	108.6	0.00	13.6	0.8	108.7	-0.08	11.5	1.7	15	LA
4JGFWD	114.0	116.6	116.1	112.1	114.7	1.64	10.1	2.1	112.8	1.23	12.4	4.4	16	AX
62FTAK	100.8	101.8	105.8	115.2	105.9	-0.73	10.9	6.6 H	104.7	-1.37	10.6	10.6 H	16	LA
64JL4J	109.1	109.3	109.0 L	109.0	109.1	0.14	7.1	0.2 L	109.0	0.01	7.3	0.2 L	16	LJ
6P4K8T	101.6	97.3 *	99.6	102.5	100.2	-2.25 *	9.4	2.3	99.1	-3.15 X	9.1	2.6	16	RE
7LEFAF	101.5	100.0	104.6	112.5	104.6	-1.07	11.4	5.6	106.9	-0.67	8.4	3.0	16	LA
7MR83W	109.9	109.8	106.6	105.7	108.0	-0.16	10.8	2.2	109.9	0.31	10.4	3.5	16	AA
97EDPD	114.3	112.2	113.0	109.9	112.4	1.01	13.6	1.9	112.6	1.16	13.0	2.7	16	LA
9Q6R3G	108.3	113.5	112.3	109.9	111.0	0.64	9.2	2.3	112.2	1.05	10.6	2.9	16	AH
A46TBC	118.6 *	118.2 *	112.8	115.1	116.2	2.04 *	12.6	2.7	116.1	2.30 *	12.0	3.5	16	LA
A7BBDE	109.9	108.6	112.5	111.4	110.6	0.54	12.7	1.7	110.3	0.44	11.1	1.9	12	LA
AUKLD9	114.2	114.7	109.1	111.3	112.3	1.01	8.9	2.6	114.9	1.88	9.7	2.4	16	LC
AXJXCT	107.4	108.3	108.2	109.1	108.3	-0.10	11.5	0.7	106.3	-0.86	9.7	4.1	16	AH
B6X7BA	110.2	103.8	106.7	111.5	108.1	-0.15	11.3	3.5	108.6	-0.12	12.3	2.8	15	TB
BFC3B8	125.8XH	103.8	109.8	105.9	111.3	0.73	12.3	10.0 H	111.8	0.90	13.1	9.5 H	16	XX
BLM77F	105.2	100.9	101.1	105.1	103.1	-1.49	8.4	2.4	104.5	-1.43	8.6	2.8	16	LC
BWL4TF	112.9	113.2	108.5	114.6	112.3	0.99	9.8	2.7	113.0	1.29	9.3	4.0	16	LC
C8HAJ8	112.3	112.4	115.0	110.8	112.6	1.07	10.2	1.8	106.7	-0.72	13.3	4.9	16	LB
DMPTU4	106.2	99.1 *	99.5	103.6	102.1	-1.75	7.7	3.4	105.7	-1.04	8.9	5.4	16	LA
DQ7DGJ	106.2	108.2	No Data	104.9	106.4	-0.58	7.6	1.7	107.7	-0.40	12.6	4.6	15	LC
E24FG8	100.9	107.4 H	105.1	108.6	105.5	-0.84	12.5	3.4	107.7	-0.40	11.2	4.2	16	LC
E4TM24	99.0 *	103.5	102.7	104.9	102.5	-1.64	8.3	2.5	103.1	-1.86	8.8	2.6	16	LA
EKVJ2E	104.8	100.2	101.2	99.8 *	101.5	-1.91	9.4	2.3	103.9	-1.61	10.5	4.5	11	AH
GAMNVE	106.8	106.8 L	106.0	104.4 L	106.0	-0.70	4.9	1.1	104.0	-1.58	5.5	2.1	16	RE
GHZP93	109.3	109.0	105.2	109.3	108.2	-0.11	11.2	2.0	107.2	-0.57	11.2	3.6	16	XX
HV62LG	108.8	107.8	109.2	108.8	108.7	0.01	5.8	0.6	107.6	-0.44	5.5	1.4	16	AH
J26WK8	103.5	107.9	103.2	104.3	104.7	-1.04	8.3	2.2	106.2	-0.89	10.4	2.0	16	LZ
JM7V7K	114.0	113.6	108.3	112.0	112.0	0.91	10.9	2.6	108.8	-0.06	11.0	5.0	16	LC
K9NKU3	112.2	111.4	108.9	110.8	110.8	0.59	10.3	1.4	109.3	0.12	11.4	3.0	16	LA
KLA2JZ	111.2	114.8	118.4 *	116.5	115.2	1.78	12.2	3.0	113.5	1.46	12.5	2.8	16	LZ
LCYXBF	111.4 L	112.8 L	112.0 L	109.8	111.5	0.78	3.9	1.3	111.8	0.89	3.7	0.9 L	16	XX
LWMJV4	112.5	110.9	110.2	113.1	111.7	0.83	10.2	1.4	112.9	1.24	11.6	5.9	16	LA

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D2

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
P69NCU	104.7	103.0	104.6	105.1	104.3	-1.15	10.4	0.9	104.7	-1.35	11.2	2.8	16	LC
QGW6H7	109.6	108.4	107.2	110.0	108.8	0.05	6.5	1.3	108.1	-0.29	7.6	1.1	16	TP
RAEYHT	108.1	107.6	100.4	107.7	106.0	-0.72	9.3	3.7	107.0	-0.64	9.9	3.8	16	AH
RPMAQX	113.2	114.0	113.5	105.0	111.4	0.76	9.1	4.3	112.8	1.21	8.9	3.2	16	LC
T8H38P	107.2	106.8	104.9	105.7	106.1	-0.67	8.7	1.1	109.8	0.28	8.4	3.5	16	TB
TMVCDZ	105.6	104.0	109.8	108.1	106.9	-0.47	10.0	2.6	106.1	-0.91	11.2	2.7	16	LC
U4ELER	104.9	111.7	109.3	112.1	109.5	0.24	10.7	3.3	108.7	-0.10	11.0	3.8	10	LC
UYKRE7	114.7	112.4	115.9	113.5	114.1	1.49	10.3	1.5	113.7	1.51	10.1	2.1	16	LA
UZG3CU	118.6 *	110.2	118.1 *	116.4	115.8	1.94 *	11.9	3.9	109.9	0.28	11.2	5.5	16	LJ
VFBUVA	110.5	101.5	115.1 L	111.1	109.5	0.25	8.8	5.7	109.2	0.08	7.5	12.1 H	15	AH
W2PYWP	111.3	111.1	106.6	110.5	109.9	0.34	11.9	2.2	111.3	0.74	11.9	2.7	16	LC
W8TZVX	109.9	107.8	104.8	101.7	106.1	-0.69	11.4	3.6	106.3	-0.85	10.8	3.2	16	LC
WULV66	116.2	109.5 H	115.6	110.5	113.0	1.17	13.9	3.4	115.0	1.92	12.7	3.7	16	XX
Y2ZKJV	105.8	113.0	107.8	107.6	108.6	-0.02	7.9	3.1	108.1	-0.27	9.4	2.2	16	LA
Y7QVTU	107.6	106.6	106.9	105.8	106.7	-0.51	11.3	0.8	108.7	-0.08	10.6	2.9	16	TB
Y9WFGU	110.3	105.9	110.0	106.2	108.1	-0.14	10.1	2.4	108.1	-0.28	10.1	2.4	4	LC
YEZJ8T	107.7	113.2	107.8	109.7	109.6	0.27	9.6	2.6	109.3	0.12	10.4	1.7	9	AH
YR7CWJ	112.0	110.1	109.0 H	114.0	111.3	0.71	14.3	2.2	112.2	1.05	13.0	3.0	16	LZ
ZH4EQV	106.7	103.3	102.5	101.8	103.6	-1.36	9.9	2.2	105.6	-1.09	10.3	2.9	16	LC
ZXVA3L	108.3	109.7	112.6	106.2	109.2	0.16	9.8	2.7	110.4	0.45	11.0	2.1	16	LZ

Consensus (All Labs) Results

Wk Mean	108.84	108.39	108.29	108.64	Month Mean	108.61	Grand Mean	108.96
Avg SDr	9.70	10.21	10.48	10.51	Avg SD	10.26	Avg SD	10.45
SD btwn Labs	4.36	4.65	4.66	4.09	SD btwn Labs	3.71	SD btwn Labs	3.13
Labs Incld	54	55	54	55	SD btwn Wks	3.08	SD btwn Wks	4.07
Labs Excld	1	0	0	0	Labs Incld	55	Labs Incld	54
Labs not Rcvd	0	0	1	0				

Key to Instrument Codes Reported by Participants

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

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
276YFK	83.0	83.0 *	85.0 L	81.3 *	83.1	-2.05 *	6.8	1.5	83.1	-2.05 *	6.8	1.5	4	LA
2F4YPH	86.9	91.4	88.8	87.3	88.6	-0.71	8.9	2.0	88.6	-0.71	8.9	2.0	4	LA
37Y7YN	90.3	86.9	91.4	96.0	91.2	-0.09	9.9	3.8	91.2	-0.09	9.9	3.8	4	LC
4DE7UR	79.6 *	87.9	81.3	83.7	83.1	-2.03 *	6.8	3.6	83.1	-2.03 *	6.8	3.6	4	LA
4JGFWD	96.0	93.1	95.4	92.5	94.2	0.66	8.8	1.7	94.2	0.66	8.8	1.7	4	AX
62FTAK	94.8	93.1	95.1	93.1	94.0	0.61	8.3	1.1	94.0	0.61	8.3	1.1	4	LA
64JL4J	88.8	88.2	88.6	88.6	88.6	-0.72	5.8	0.3 L	88.6	-0.72	5.8	0.3 L	4	LJ
6P4K8T	80.6 *	84.3 *	81.4	83.8	82.5	-2.18 *	8.0	1.8	82.5	-2.18 *	8.0	1.8	4	RE
7LEFAF	93.5	90.4	90.3	93.2	91.9	0.08	7.2	1.8	91.9	0.08	7.2	1.8	4	LA
7MR83W	93.1	93.1	90.4	90.4	91.8	0.06	8.9	1.6	91.8	0.06	8.9	1.6	4	AA
97EDPD	93.8	92.5	95.9 L	97.3	94.9	0.82	7.3	2.1	94.9	0.82	7.3	2.1	4	LA
9Q6R3G	95.7	93.8	99.4	93.2	95.5	0.97	9.7	2.8	95.5	0.97	9.7	2.8	4	AH
A46TBC	98.8	95.1	101.3	98.5	98.4	1.68	8.2	2.6	98.4	1.68	8.2	2.6	4	LA
A7BBDE	86.1	96.4	88.4	90.0	90.2	-0.31	8.9	4.4	90.2	-0.31	8.9	4.4	4	LJ
AUKLD9	94.8	94.0	96.2	94.2	94.8	0.79	8.3	1.0	94.8	0.79	8.3	1.0	4	LC
AXJXCT	93.4	91.8	86.2	88.7	90.0	-0.36	7.7	3.2	90.0	-0.36	7.7	3.2	4	AH
B6X7BA	91.1	95.3	92.6	96.1	93.8	0.55	8.9	2.3	93.8	0.55	8.9	2.3	4	TB
BFC3B8	96.0	89.8	99.5	109.9 XH	98.8	1.77	10.8	8.4 H	98.8	1.77	10.8	8.4 H	4	XX
BLM77F	87.6	86.3	84.5	85.0	85.9	-1.37	7.4	1.4	85.9	-1.37	7.4	1.4	4	LA
BWL4TF	92.0	89.8	93.9	87.8	90.9	-0.15	7.8	2.6	90.9	-0.15	7.8	2.6	4	LC
C8HAJ8	90.2	90.8	90.0	92.3	90.8	-0.16	6.7	1.0	90.8	-0.16	6.7	1.0	4	LB
DMPTU4	86.2	90.1 L	85.9	89.6 L	88.0	-0.86	5.2	2.2	88.0	-0.86	5.2	2.2	4	LA
DQ7DGJ	85.6	87.7	No Data	88.6	87.3	-1.02	9.7	1.5	87.3	-1.02	9.7	1.5	3	LC
E24FG8	93.7	93.5	89.7	91.2	92.0	0.12	8.2	1.9	92.0	0.12	8.2	1.9	4	LC
E4TM24	89.9	85.6	83.9	84.0	85.8	-1.38	6.9	2.8	85.8	-1.38	6.9	2.8	4	LA
EKVJ2E	86.8	87.2	85.7	86.1	86.5	-1.23	8.0	0.7	86.5	-1.23	8.0	0.7	4	AH
GAMNVE	95.0 L	93.8 L	95.6	96.8	95.3	0.92	5.1	1.2	95.3	0.92	5.1	1.2	4	RE
GHZP93	91.8	94.8	93.4	94.1	93.5	0.49	7.9	1.3	93.5	0.49	7.9	1.3	4	XX
HV62LG	76.8 XL	76.5 X	75.6 *	74.7 XL	75.9	-3.79 X	3.5	0.9	75.9	-3.79 X	3.5	0.9	4	AH
J26WK8	90.3	85.6	86.9	85.6	87.1	-1.07	8.6	2.2	87.1	-1.07	8.6	2.2	4	LA
JM7V7K	94.8	92.0	90.1	89.5	91.6	0.02	8.9	2.4	91.6	0.02	8.9	2.4	4	LC
K9NKU3	94.9	92.4	89.2	95.3	93.0	0.35	9.4	2.8	93.0	0.35	9.4	2.8	4	LA
KLA2JZ	95.8	94.2	99.1	95.9	96.3	1.15	9.4	2.1	96.3	1.15	9.4	2.1	4	LZ
LCYXBF	89.6 L	89.2	91.5	90.9	90.3	-0.29	5.1	1.1	90.3	-0.29	5.1	1.1	4	XX
LWMJV4	89.9	91.2	92.4	101.7 *H	93.8	0.55	11.4	5.3 H	93.8	0.55	11.4	5.3 H	4	LA

Containerboard Interlaboratory Testing Program

Analysis 207

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

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
P69NCU	89.1	90.9	86.6	88.9	88.9	-0.64	7.1	1.7	88.9	-0.64	7.1	1.7	4	LA
QGW6H7	78.3 *	77.4 X	76.0 *	75.7 X	76.9	-3.56 X	4.2	1.2	76.9	-3.56 X	4.2	1.2	4	TP
RAEYHT	90.3	89.7	91.8	87.9	89.9	-0.38	8.3	1.6	89.9	-0.38	8.3	1.6	4	AH
T8H38P	98.5	99.2	96.7	102.9 *	99.3	1.89	5.9	2.6	99.3	1.89	5.9	2.6	4	TB
TMVCDZ	94.6	91.1	95.3	94.5	93.9	0.57	10.2	1.9	93.9	0.57	10.2	1.9	4	LC
U4ELER	90.8	92.2	88.4	87.3	89.7	-0.44	9.0	2.2	89.7	-0.44	9.0	2.2	4	LC
UYKRE7	95.9	99.2 *	94.4	96.6	96.5	1.22	8.7	2.0	96.5	1.22	8.7	2.0	4	LA
UZG3CU	89.1	95.4	95.8	95.5	93.9	0.58	7.8	3.2	93.9	0.58	7.8	3.2	4	LJ
VFBUVA	88.2	91.3	89.3	91.3	90.0	-0.36	8.0	1.5	90.0	-0.36	8.0	1.5	4	AH
W2PYWP	94.9	99.8 *	89.4	95.4	94.9	0.81	7.1	4.3	94.9	0.81	7.1	4.3	4	LC
W8TZVX	88.4	90.5	89.1	88.0	89.0	-0.61	7.3	1.1	89.0	-0.61	7.3	1.1	4	LC
WULV66	98.4	96.2	94.0	89.5	94.5	0.73	10.2	3.8	94.5	0.73	10.2	3.8	4	XX
Y2ZKJV	87.5	90.6	91.2	89.2	89.6	-0.46	7.9	1.6	89.6	-0.46	7.9	1.6	4	LA
Y7QVTU	98.2	98.2	95.5	93.1	96.2	1.14	9.7	2.4	96.2	1.14	9.7	2.4	4	TB
Y9WFGU	90.3	90.4	87.7	95.5	91.0	-0.13	8.0	3.3	91.0	-0.13	8.0	3.3	4	LC
YEZJ8T	97.7	94.5	98.9	95.4	96.6	1.24	6.3	2.0	96.6	1.24	6.3	2.0	4	AH
YR7CWJ	93.6	96.5	98.3	97.7	96.5	1.22	11.0	2.1	96.5	1.22	11.0	2.1	4	LZ
ZH4EQV	85.6	86.4	82.1	81.6 *	83.9	-1.84	8.4	2.4	83.9	-1.84	8.4	2.4	4	LA
ZXVA3L	92.0	94.0	88.1	88.9	90.8	-0.18	8.8	2.7	90.8	-0.18	8.8	2.7	4	LZ

Consensus (All Labs) Results

Wk Mean	91.16	91.73	90.62	91.41	Month Mean	91.51	Grand Mean	91.51
Avg SDr	8.53	8.02	8.03	8.21	Avg SD	8.29	Avg SD	8.29
SD btwn Labs	4.78	3.84	5.71	4.90	SD btwn Labs	4.12	SD btwn Labs	4.12
Labs Incld	53	52	53	51	SD btwn Wks	2.67	SD btwn Wks	2.67
Labs Excld	1	2	0	3	Labs Incld	52	Labs Incld	52
Labs not Rcvd	0	0	1	0				

Key to Instrument Codes Reported by Participants

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

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
276YFK	88.2 L	89.5	89.1	89.0	88.9	0.09	2.2	0.5 L	89.4	0.13	3.2	0.8 L	8	LZ
37Y7YN	92.2	92.5	92.8	92.2	92.4	0.87	3.8	0.3 L	92.6	0.92	5.3	5.6	12	LC
3LQ42J	88.1	88.0	87.9	88.0	88.0	-0.11	3.0	0.1 L	87.5	-0.33	2.9	1.3	16	EM
4E73GZ	89.8	89.6	89.4	88.6	89.4	0.19	3.0	0.5 L	89.2	0.10	3.1	1.0	16	TH
4JGFWD	88.8	82.1	73.3 X	68.4 X	78.1	-2.31 *	4.1	9.1 H	84.2	-1.11	4.5	7.3 H	16	LC
62FTAK	96.8	94.9	93.2	93.1	94.5	1.34	3.6	1.8	94.1	1.27	4.9	6.6	16	LC
64JL4J	87.3	87.2	86.9	87.1	87.1	-0.31	3.2	0.2 L	88.6	-0.05	5.8	0.9 L	16	LD
64MB7V	91.9	98.4 *	96.8	94.6	95.4	1.54	3.4	2.8	92.2	0.81	3.6	2.6	16	MB
6P4K8T	92.8	93.1	92.8	92.9	92.9	0.98	3.9	0.1 L	87.9	-0.22	3.6	4.3	16	EM
7LEFAF	85.4	85.0	88.7	90.2	87.3	-0.26	4.2	2.5	85.5	-0.79	3.8	2.0	16	LD
7MR83W	85.6	86.1	88.6	87.1	86.9	-0.37	3.4	1.3	86.7	-0.52	3.6	1.8	16	LD
7RM2ZX	85.0	86.0	84.3	88.5 L	85.9	-0.58	4.6	1.9	85.4	-0.83	4.0	1.6	16	EM
97H3RP	91.2	93.3	92.2	90.1	91.7	0.71	2.7	1.4	91.3	0.60	3.0	1.0	16	LD
9NDTNJ	92.2	88.3	89.8	92.4	90.7	0.48	3.7	2.0	90.8	0.47	3.5	1.1	16	LD
A46TBC	91.7	95.1	93.9	94.4	93.8	1.17	4.6	1.5	92.1	0.80	4.3	2.3	16	LZ
A7BBDE	81.3 *	81.3	81.6	84.3	82.1	-1.43	4.4	1.4	80.1	-2.09 *	3.8	2.3	12	TU
AXJXCT	90.1	91.0	93.2	90.4	91.2	0.59	3.1	1.4	89.9	0.26	3.9	2.0	16	LC
B6X7BA	66.2 XH	82.3	89.4	90.5	82.1	-1.43	4.3	11.2 H	77.9	-2.62 *	4.9	6.7	15	LZ
BLM77F	82.0	84.9	80.6	83.3	82.7	-1.30	3.9	1.8	83.1	-1.37	3.8	1.5	12	LD
BWL4TF	87.6	88.0	88.2	89.2	88.3	-0.06	3.7	0.7	88.5	-0.09	3.9	1.7	16	LD
C8HAJ8	83.8	85.7	85.3	86.1	85.2	-0.74	4.5	1.0	87.4	-0.34	3.7	2.0	16	LC
DMPTU4	95.0	95.7	92.0	126.2 X	102.2	3.06 X	3.5	16.1 H	96.9	1.94 *	4.5	10.2 H	16	LC
DQ7DGJ	92.6	95.0	No Data	90.9	92.8	0.96	4.5	2.1	93.2	1.06	3.9	3.2	15	LD
DQQWJ6	71.8 X	79.7 *	76.3 *H	78.8 *	76.6	-2.65 *	5.4	3.5	85.0	-0.92	4.6	5.5	16	MB
E24FG8	88.8	89.9	90.1	87.7	89.1	0.14	3.5	1.1	87.8	-0.25	3.7	1.4	16	LD
E4TM24	90.8	88.1	89.9	89.2	89.5	0.22	2.9	1.2	89.4	0.13	3.7	1.3	16	LD
EKVJ2E	85.1	83.8	80.1	73.9 X	80.7	-1.73	4.3	5.0	83.5	-1.28	3.8	4.6	8	LC
FVVC9K	92.6	90.4	93.0 L	94.3	92.6	0.90	3.1	1.6	92.8	0.96	3.0	2.0	16	LD
GAMNVE	85.6	86.7	86.1	87.8	86.5	-0.44	3.3	0.9	89.0	0.04	3.8	3.2	16	LZ
H37KFY	90.1	84.9	91.7 L	92.7 L	89.8	0.29	1.8	3.5	91.4	0.61	3.0	3.4	12	XX
H6WGBK	91.3 L	91.8 L	91.7 L	93.1 L	92.0	0.77	1.3	0.8	91.4	0.63	2.7	1.3	16	TD
J26WK8	86.7	86.7	84.1	86.2	85.9	-0.58	3.9	1.3	86.2	-0.62	4.0	1.0	16	LD
K9NKU3	73.0 XH	98.5 *	97.7	81.3	87.6	-0.20	5.8	12.6 H	90.7	0.46	6.8	7.4 H	16	LC
KD33CJ	73.4 XH	73.4 XH	72.4 XH	72.7 XH	73.0	-3.46 X	9.5	0.5 L	66.8	-5.30 X	8.8	8.8 H	12	EM
KLA2JZ	87.5	82.9	83.6	88.0	85.5	-0.67	4.0	2.6	86.4	-0.58	4.0	2.2	16	LC

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D2

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
LCYXBF	93.8	91.5	93.8	88.2	91.8	0.74	4.8	2.6	88.4	-0.10	4.7	4.4	16	LD
LWMJV4	96.8	97.1	97.6	98.2 *	97.4	1.98 *	4.4	0.6	97.9	2.19 *	4.0	1.6	16	LD
MDQBBD	90.5	89.0	88.2	86.8	88.6	0.02	4.1	1.5	84.3	-1.09	6.0	9.1 H	12	XX
NT2DAD	83.3	83.4	80.4	79.2 *	81.6	-1.55	4.9	2.1	82.3	-1.57	4.6	2.3	12	LC
P69NCU	82.5	83.4	84.7	84.0	83.7	-1.09	4.1	0.9	84.5	-1.03	3.9	2.0	16	LC
PTCHHV	84.5	81.1	84.6	86.5	84.2	-0.97	3.8	2.3	82.9	-1.43	3.6	1.9	16	EN
QGW6H7	88.9	87.9	90.6	86.9	88.6	0.01	4.1	1.6	88.6	-0.06	3.7	1.5	16	TH
RAEYHT	85.0	85.6	88.0	86.6	86.3	-0.50	4.7	1.3	87.0	-0.44	4.2	1.5	16	LD
RNC93E	89.6	92.9	92.6	93.7	92.2	0.82	3.7	1.8	92.8	0.96	4.2	1.5	16	EM
T8H38P	98.8 *	98.2 *	100.0 *	101.0 X	99.5	2.45 *	4.3	1.2	99.1	2.47 *	4.8	2.2	16	LX
TMVCDZ	93.7	88.2	90.2	90.7	90.7	0.49	4.0	2.2	92.7	0.94	4.9	2.2	16	LC
UJTUDB	89.8	91.0	92.5	90.5	90.9	0.54	4.3	1.1	91.6	0.67	4.3	2.0	12	MB
UYKRE7	91.9	91.3	91.9	91.1	91.6	0.68	3.4	0.4 L	90.6	0.42	3.3	1.1	16	LD
UZG3CU	88.4	86.7	88.4	86.6	87.5	-0.23	4.5	1.0	90.0	0.28	3.9	2.7	16	LD
VFBUVA	97.2 *	95.0	87.8	92.3	93.1	1.02	4.3	4.0	94.9	1.47	4.4	3.7	16	LZ
W8TZVX	88.0	88.5	88.5	90.7	88.9	0.09	4.1	1.2	89.0	0.04	3.9	1.7	16	LD
WBA7UT	88.2	87.5	87.3	89.2	88.0	-0.11	2.8	0.9	88.4	-0.11	2.9	0.6 L	16	MB
Y2ZKJV	92.5	91.2	91.3	No Data	91.7	0.70	3.7	0.7	91.9	0.74	3.9	1.0	15	LD
Y7QVTU	90.0	88.1	88.9	90.6	89.4	0.19	4.2	1.1	89.0	0.04	4.9	2.4	16	LC
Y9WFGU	88.7	88.2	88.0	89.3	88.6	0.01	3.6	0.6	88.6	-0.07	3.6	0.6 L	4	LC
YR7CWJ	89.3	86.0	86.8	86.0	87.0	-0.33	2.8	1.6	86.7	-0.51	3.4	1.2	16	LG
ZH4EQV	86.3	87.3	81.2	80.4 *	83.8	-1.05	3.8	3.5	84.8	-0.96	4.5	3.8	16	LZ

Consensus (All Labs) Results

Wk Mean	89.35	88.85	88.96	88.81	Month Mean	88.52	Grand Mean	88.82
Avg SDr	3.89	3.83	3.93	3.67	Avg SD	3.90	Avg SD	4.11
SD btwn Labs	3.96	4.62	4.75	3.98	SD btwn Labs	4.48	SD btwn Labs	4.15
Labs Incld	53	56	54	51	SD btwn Wks	3.15	SD btwn Wks	3.49
Labs Excld	4	1	2	5	Labs Incld	55	Labs Incld	56
Labs not Rcvd	0	0	1	1				

Key to Instrument Codes Reported by Participants

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

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
276YFK	79.8	79.1	78.9 L	79.7 L	79.4	0.51	2.0	0.4 L	79.4	0.51	2.0	0.4 L	4	LZ
37Y7YN	82.7	81.4	81.4	77.7 H	80.8	0.80	4.1	2.2	80.8	0.80	4.1	2.2	4	LC
3LQ42J	88.1 *	88.0 *	87.9 *	88.0 *	88.0	2.26 *	3.0	0.1 L	88.0	2.26 *	3.0	0.1 L	4	EX
4E73GZ	76.4	76.3	76.1	76.1	76.2	-0.13	2.6	0.1 L	76.2	-0.13	2.6	0.1 L	4	TH
4JGFWD	75.3	69.8	61.8 *	60.8 X	66.9	-2.01 *	3.7	6.9 H	66.9	-2.01 *	3.7	6.9 H	4	LC
62FTAK	84.1	87.2 *	85.6	86.5 *	85.8	1.82	2.8	1.4	85.8	1.82	2.8	1.4	4	LC
64JL4J	78.1	78.2	78.2	78.2	78.2	0.27	3.3	0.0 L	78.2	0.27	3.3	0.0 L	4	LD
64MB7V	75.7	83.1	83.0	80.4	80.5	0.75	3.1	3.4	80.5	0.75	3.1	3.4	4	MB
6P4K8T	75.7	77.3	80.8	77.9	77.9	0.21	3.7	2.1	77.9	0.21	3.7	2.1	4	EM
7LEFAF	74.5	74.8 H	73.2	78.2	75.2	-0.34	4.3	2.1	75.2	-0.34	4.3	2.1	4	LD
7MR83W	74.8	75.5 L	76.1	75.9	75.6	-0.26	2.5	0.6	75.6	-0.26	2.5	0.6	4	LD
7RM2ZX	75.2	78.6	78.4	78.8	77.8	0.19	3.7	1.7	77.8	0.19	3.7	1.7	4	EM
97H3RP	78.7	80.7	79.3	81.3	80.0	0.64	2.8	1.2	80.0	0.64	2.8	1.2	4	LD
9NDTNJ	78.9	79.5	79.0	77.9	78.8	0.40	3.0	0.7	78.8	0.40	3.0	0.7	4	LD
A46TBC	81.2	81.4	82.4	81.3	81.6	0.96	3.0	0.6	81.6	0.96	3.0	0.6	4	LZ
A7BBDE	71.3	69.9	71.1	72.2	71.1	-1.16	2.8	0.9	71.1	-1.16	2.8	0.9	4	TU
AXJXCT	79.1	82.6	82.5	80.6	81.2	0.88	3.7	1.7	81.2	0.88	3.7	1.7	4	LC
B6X7BA	55.8 XH	66.5 *	67.2	70.4	65.0	-2.41 *	4.3	6.4 H	65.0	-2.41 *	4.3	6.4 H	4	LZ
BLM77F	75.2	73.2	76.1	74.9	74.9	-0.40	2.6	1.2	74.9	-0.40	2.6	1.2	4	LD
BWL4TF	74.4	74.8	73.9	75.9	74.7	-0.43	3.5	0.9	74.7	-0.43	3.5	0.9	4	LD
C8HAJ8	74.9	71.8	72.1	70.3	72.3	-0.93	3.9	1.9	72.3	-0.93	3.9	1.9	4	LC
DMPTU4	80.3	78.4	80.5 H	102.7 X	85.5	1.75	5.2	11.5 H	85.5	1.75	5.2	11.5 H	4	LC
DQ7DGJ	76.8	81.8	No Data	79.6	79.4	0.51	2.8	2.5	79.4	0.51	2.8	2.5	3	LD
DQQWJ6	69.0	72.2	72.2	71.4	71.2	-1.14	3.8	1.5	71.2	-1.14	3.8	1.5	4	MB
E24FG8	75.1	80.6	76.3	77.2	77.3	0.09	3.5	2.4	77.3	0.09	3.5	2.4	4	LD
E4TM24	77.3	76.1	75.7	76.0	76.3	-0.12	3.2	0.7	76.3	-0.12	3.2	0.7	4	LD
EKVJ2E	73.2	72.7	63.9 *	72.5	70.6	-1.27	3.4	4.5	70.6	-1.27	3.4	4.5	4	LC
FVVC9K	78.5	77.4	80.1	78.8	78.7	0.37	3.6	1.1	78.7	0.37	3.6	1.1	4	LD
GAMNVE	74.1	76.7	74.5	73.1 L	74.6	-0.45	2.3	1.5	74.6	-0.45	2.3	1.5	4	LZ
H37KFY	78.7	73.0	74.0 L	74.2	75.0	-0.38	1.9	2.6	75.0	-0.38	1.9	2.6	4	XX
H6WGBK	76.7 L	78.6	77.1	76.5 L	77.2	0.08	2.3	1.0	77.2	0.08	2.3	1.0	4	TD
J26WK8	75.6	76.0	77.0	74.6	75.8	-0.22	3.3	1.0	75.8	-0.22	3.3	1.0	4	LD
K9NKU3	65.9 *H	79.2	75.7	68.2 *	72.3	-0.93	5.6	6.2 H	72.3	-0.93	5.6	6.2 H	4	LC
KD33CJ	64.1 XH	64.1 *H	64.5 *H	65.3 *H	64.5	-2.50 *	7.2	0.5	64.5	-2.50 *	7.2	0.5	4	EM
KLA2JZ	74.0	72.5	74.3	73.5	73.6	-0.66	3.5	0.8	73.6	-0.66	3.5	0.8	4	LC

Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 35 lb Linerboard - 35E1

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
LCYXBF	72.6	77.0	75.2	73.9 H	74.7	-0.44	4.6	1.9	74.7	-0.44	4.6	1.9	4	LD
LWMJV4	85.6 *	85.0	84.3	81.6	84.1	1.47	3.6	1.7	84.1	1.47	3.6	1.7	4	LD
MDQBBD	78.2	78.0	78.3	81.9	79.1	0.46	3.3	1.9	79.1	0.46	3.3	1.9	4	XX
NT2DAD	67.5 *	66.4 *	65.7 *	63.2 X	65.7	-2.26 *	4.5	1.8	65.7	-2.26 *	4.5	1.8	4	LC
P69NCU	70.9	70.3	73.1	73.0	71.8	-1.02	4.1	1.4	71.8	-1.02	4.1	1.4	4	LC
PTCHHV	75.6	75.8	76.0	74.4	75.4	-0.29	2.2	0.7	75.4	-0.29	2.2	0.7	4	EN
QGW6H7	75.6	78.1	78.3	78.3	77.6	0.15	3.3	1.3	77.6	0.15	3.3	1.3	4	TH
RAEYHT	77.8	75.7	76.8	75.8	76.5	-0.07	3.0	1.0	76.5	-0.07	3.0	1.0	4	LD
RNC93E	81.7	79.5	82.9	82.7	81.7	0.98	3.5	1.6	81.7	0.98	3.5	1.6	4	EM
T8H38P	83.3	84.2	88.7 *H	83.0 H	84.8	1.61	5.8	2.7	84.8	1.61	5.8	2.7	4	LX
TMVCDZ	80.3	78.0	79.0	77.5	78.7	0.37	3.8	1.2	78.7	0.37	3.8	1.2	4	LC
UJTUDB	73.9	78.9	86.0	76.8	78.9	0.41	4.3	5.1	78.9	0.41	4.3	5.1	4	MB
UYKRE7	82.0	80.1	80.2	81.2	80.9	0.82	3.3	0.9	80.9	0.82	3.3	0.9	4	LD
UZG3CU	77.9	76.5	77.7	76.9	77.3	0.08	2.7	0.6	77.3	0.08	2.7	0.6	4	LD
VFBUVA	81.8	81.9	78.8	82.5	81.2	0.89	3.3	1.7	81.2	0.89	3.3	1.7	4	LZ
W8TZVX	78.3	77.9	79.5	79.3	78.7	0.38	3.9	0.8	78.7	0.38	3.9	0.8	4	LD
WBA7UT	71.8	71.5	70.2	70.1	70.9	-1.20	3.4	0.9	70.9	-1.20	3.4	0.9	4	MB
Y2ZKJV	79.3	80.2	79.0	79.5 L	79.5	0.54	3.9	0.5	79.5	0.54	3.9	0.5	4	LD
Y7QVTU	75.1	77.4 H	80.0	80.5 H	78.2	0.28	6.5	2.5	78.2	0.28	6.5	2.5	4	LC
Y9WFGU	76.5	78.8	78.1	78.6	78.0	0.23	4.1	1.0	78.0	0.23	4.1	1.0	4	LC
YR7CWJ	77.4	78.6	79.3 L	81.6 L	79.2	0.48	2.3	1.8	79.2	0.48	2.3	1.8	4	LG
ZH4EQV	74.4	77.4	70.7	72.1	73.6	-0.65	3.5	2.9	73.6	-0.65	3.5	2.9	4	LZ

Consensus (All Labs) Results

Wk Mean	76.86	77.13	76.93	77.12	Month Mean	76.85	Grand Mean	76.85
Avg SDr	3.86	3.49	3.70	3.61	Avg SD	3.70	Avg SD	3.70
SD btwn Labs	4.20	4.79	5.62	4.44	SD btwn Labs	4.94	SD btwn Labs	4.94
Labs Incld	55	57	56	54	SD btwn Wks	2.75	SD btwn Wks	2.75
Labs Excld	2	0	0	3	Labs Incld	57	Labs Incld	57
Labs not Rcvd	0	0	1	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
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Compression Tester, Model 17-76	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
37Y7YN	21.0 L	21.1 L	21.0 L	21.4 L	21.1	-1.03	0.3	0.2	21.4	-0.96	0.3	0.6	12	LA
3HALXG	49.8 X	45.8 XH	47.2 X	47.9 X	47.7	24.55 X	2.9	1.7	47.7	25.98 X	2.9	1.7	4	LH
4DE7UR	22.7	22.7	22.8	22.7	22.7	0.49	2.2	0.1 L	22.9	0.64	2.1	0.4	15	LW
4JGFWD	23.3	21.3	23.0	21.6	22.3	0.08	1.6	1.0	22.2	-0.13	1.6	1.6	16	XX
6P4K8T	22.2	23.5	22.3	22.6	22.7	0.42	1.5	0.6	22.5	0.20	2.0	1.0	16	LZ
7LEFAF	22.6 L	23.2	23.5	22.3	22.9	0.66	1.4	0.5	22.1	-0.27	1.3	0.9	15	LA
7MR83W	20.2	21.3	21.0	20.3	20.7	-1.47	1.9	0.5	21.0	-1.32	1.9	0.6	16	LW
97EDPD	23.5	23.0	24.5	23.2	23.5	1.25	1.7	0.7	23.3	1.00	2.1	0.6	16	LU
97H3RP	21.0	21.6	21.7	21.5	21.4	-0.77	1.8	0.3	21.5	-0.85	1.7	0.6	16	LY
9NDTNJ	22.3	21.9	22.0	22.6	22.2	-0.03	1.9	0.3	22.2	-0.17	1.8	0.6	16	LY
A46TBC	21.4	21.5	22.2	21.7	21.7	-0.53	1.9	0.4	21.6	-0.73	1.8	0.5	16	LW
AUKLD9	23.9	24.6 *	22.2	24.7 *	23.8	1.55	2.2	1.1	24.7	2.40 *	2.2	1.0	16	LA
AXJXCT	22.4	22.2	22.3	22.7	22.4	0.19	2.1	0.2	22.3	0.01	2.1	0.3	16	LU
B6X7BA	20.6	21.4	22.1	20.7	21.2	-0.98	1.7	0.7	21.4	-0.99	1.9	0.4	15	LZ
BFC3B8	20.2	20.6	19.9 *H	19.3 *	20.0	-2.15 *	2.2	0.5	21.0	-1.41	1.8	1.3	16	XX
BLM77F	22.1	21.5	22.1	21.9 L	21.9	-0.29	1.4	0.3	22.1	-0.22	1.6	0.5	16	LA
BWL4TF	23.1	21.5	22.5 L	22.3 H	22.4	0.13	1.9	0.6	22.7	0.43	2.2	0.9	16	LA
C8HAJ8	22.6	22.5	23.0	22.7	22.7	0.46	1.6	0.2	23.0	0.72	1.5	0.4	16	LU
DF8HG3	19.8 *	18.0 X	18.1 X	31.0 XH	21.7	-0.47	2.3	6.2 H	20.3	-2.12 *	1.2	3.5 H	16	LW
DMPTU4	20.4	20.1	20.8	20.5	20.5	-1.71	1.7	0.3	21.3	-1.03	0.9	0.9	16	LW
DQ7DGJ	22.4	23.6	No Data	22.3	22.8	0.52	1.7	0.7	22.9	0.58	1.9	0.6	15	LZ
DQQWJ6	22.1 L	22.0 L	22.3 L	20.9 L	21.8	-0.38	0.4	0.6	22.7	0.42	0.5	0.9	16	BK
E4TM24	22.0	22.5	22.3	22.2 L	22.2	0.01	1.7	0.2	22.1	-0.28	1.7	0.5	16	BK
EKVJ2E	23.0	22.1 L	22.5 L	22.2 L	22.5	0.22	1.1	0.4	22.7	0.39	0.9	0.7	11	LY
FVVC9K	23.5	23.9	23.7	23.4	23.6	1.34	1.3	0.2	23.1	0.75	1.2	0.4	16	LH
GHZP93	20.5	19.2 *	22.2	22.0 L	21.0	-1.20	1.9	1.4	21.8	-0.55	1.8	1.3	16	XX
HV62LG	22.4 L	22.7 L	22.4 L	22.8 L	22.6	0.35	0.8	0.2	22.6	0.29	1.0	0.2 L	16	TT
J26WK8	22.2	22.5	21.6	21.6	22.0	-0.24	1.8	0.5	21.9	-0.44	1.7	0.4	16	LY
JM7V7K	21.1	21.5	21.6	20.6	21.2	-1.01	1.8	0.5	21.1	-1.23	1.5	0.4	16	LA
JV2VKD	22.8	21.0	20.3 H	22.4	21.6	-0.56	2.1	1.2	21.4	-1.00	1.9	0.8	16	XX
K9NKU3	24.8 *	23.2	24.8 *	24.9 *	24.4	2.11 *	2.0	0.8	23.9	1.62	1.9	0.8	16	LU
KLA2JZ	22.8	21.8	21.4	21.1	21.8	-0.42	2.3	0.8	22.1	-0.23	2.1	0.6	16	LW
KVXVVW	21.8	22.7	23.5	22.9	22.7	0.50	1.7	0.7	22.9	0.62	1.8	0.8	16	LH
MDQBBD	21.8	21.5	22.2	21.6	21.8	-0.43	1.9	0.3	21.9	-0.46	1.6	0.8	12	XX
P69NCU	21.0	20.3	19.6 *L	20.4	20.3	-1.83	1.6	0.6	21.1	-1.24	1.7	1.0	16	LA

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D2

TAPPI Official Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
PTCHHV	21.3	20.9	19.9	21.3	20.9	-1.30	1.8	0.7	20.7	-1.68	1.9	0.6	16	LY
Q8UM84	22.3	22.8	22.0	22.8	22.5	0.24	1.7	0.4	21.9	-0.41	1.7	0.6	16	LY
QGW6H7	21.9 L	22.3 L	22.0 L	22.0 L	22.0	-0.17	0.8	0.2 L	22.2	-0.08	1.0	0.3 L	16	TT
QWC962	20.8	20.7	21.8	20.7	21.0	-1.19	2.0	0.5	21.6	-0.71	1.7	0.6	16	LW
RAEYHT	21.8	20.9	21.5	21.7	21.5	-0.73	1.9	0.4	21.8	-0.57	2.0	0.5	16	LU
RPMAQX	21.3 L	25.8 X	21.7	22.0	22.7	0.45	1.4	2.1	22.3	-0.05	1.6	1.3	16	LA
TMVCDZ	23.1	20.9	21.2	23.2	22.1	-0.13	1.9	1.2	22.3	-0.01	2.1	0.9	16	LA
U4ELER	22.1	22.4	22.9	22.8	22.5	0.30	1.8	0.4	23.1	0.81	1.9	0.8	10	LA
UJTUDB	22.7 L	20.3 L	22.3 L	21.5 L	21.7	-0.49	0.1	1.0	26.5	4.24 X	0.2	14.8 H	12	LA
UYKRE7	23.6	23.9	23.4	23.1	23.5	1.23	1.5	0.3	23.0	0.71	1.6	0.5	16	LA
UZG3CU	22.7	22.6	23.5	22.4	22.8	0.53	1.9	0.5	24.1	1.83	1.6	3.9 H	15	LU
W2PYWP	24.2	23.9 H	23.4	24.5	24.0	1.74	2.5	0.5	24.2	1.92	2.3	0.6	16	XX
W8TZVX	22.4	22.9	22.5	22.5	22.6	0.32	1.6	0.2	23.3	1.04	1.7	1.0	16	LA
Y2ZKJV	22.3	22.4	23.4	22.9	22.8	0.52	2.0	0.5	22.8	0.49	1.8	0.5	16	LY
Y7QVTU	22.5	23.2 H	23.2	24.1	23.2	0.98	2.0	0.6	23.0	0.69	1.8	0.7	16	LW
Y9WFGU	23.7 L	22.9 L	23.3 L	24.1 L	23.5	1.24	0.0	0.5	23.5	1.21	0.0	0.5	4	LA
YEZJ8T	23.6 H	23.1 H	25.0 *	24.3	24.0	1.71	2.9	0.9	23.2	0.86	2.4	1.2	9	LU
YR7CWJ	21.5	21.5	22.0	21.9	21.7	-0.49	2.0	0.2	21.8	-0.53	2.5	0.5	16	LU
ZH4EQV	21.1	20.8	20.6	20.1	20.6	-1.53	1.5	0.4	20.7	-1.70	1.6	0.8	16	LA
ZXVA3L	23.3	23.7	25.6 *H	24.5	24.3	1.97 *	2.2	1.0	24.0	1.74	2.2	0.7	16	LZ

Consensus (All Labs) Results

Wk Mean	22.18	22.07	22.31	22.23	Month Mean	22.22	Grand Mean	22.33
Avg SDr	1.79	1.77	1.74	1.81	Avg SD	1.79	Avg SD	1.76
SD btwn Labs	1.10	1.15	1.25	1.24	SD btwn Labs	1.04	SD btwn Labs	0.98
Labs Incld	54	52	52	53	SD btwn Wks	1.08	SD btwn Wks	1.04
Labs Excld	1	3	2	2	Labs Incld	54	Labs Incld	53
Labs not Rcvd	0	0	1	0				

Analysis Notes

37Y7YN - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

DQQWJ6 - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

UJTUDB - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

Key to Instrument Codes Reported by Participants

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

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
37Y7YN	20.4 L	19.9 L	21.0 L	21.0 L	20.6	-0.97	0.3	0.5	20.6	-0.97	0.3	0.5	4	LA
3HALXG	36.3 XH	35.0 X	35.3 X	35.1 X	35.4	13.75 X	2.2	0.6	35.4	13.75 X	2.2	0.6	4	LH
4DE7UR	22.1	22.0	22.4	22.3	22.2	0.62	1.5	0.2	22.2	0.62	1.5	0.2	4	LW
4JGFWD	21.4	22.0	22.3	20.2	21.5	-0.07	1.6	0.9	21.5	-0.07	1.6	0.9	4	XX
6P4K8T	21.3 L	23.2	22.9	22.2	22.4	0.84	1.1	0.8	22.4	0.84	1.1	0.8	4	LZ
7LEFAF	20.5 L	21.5	22.8 L	22.7	21.9	0.32	1.0	1.1	21.9	0.32	1.0	1.1	4	LA
7MR83W	19.8	20.4	19.3	19.8	19.8	-1.72	1.7	0.5	19.8	-1.72	1.7	0.5	4	LW
97EDPD	23.9 *H	22.6	23.7	23.5	23.5	1.88	1.7	0.6	23.5	1.88	1.7	0.6	4	LU
97H3RP	21.0	21.0	20.6	21.2	20.9	-0.61	1.4	0.3	20.9	-0.61	1.4	0.3	4	LY
9NDTNJ	20.9	22.5	21.7	21.6	21.7	0.11	1.4	0.7	21.7	0.11	1.4	0.7	4	LY
A46TBC	20.9	20.3	21.0	20.3	20.6	-0.91	1.7	0.4	20.6	-0.91	1.7	0.4	4	LW
AUKLD9	23.7	24.1 *	21.0	24.0 *	23.2	1.63	1.6	1.5	23.2	1.63	1.6	1.5	4	LA
AXJXCT	21.6	22.2	20.7	21.6	21.5	-0.01	1.4	0.6	21.5	-0.01	1.4	0.6	4	LU
B6X7BA	20.2	21.2	21.1	20.5	20.7	-0.81	1.8	0.5	20.7	-0.81	1.8	0.5	4	LZ
BFC3B8	20.1	19.2 *	19.2 *	19.3 *	19.5	-2.08 *	1.4	0.5	19.5	-2.08 *	1.4	0.5	4	XX
BLM77F	21.4	21.2 L	21.7	22.1	21.6	0.03	1.2	0.4	21.6	0.03	1.2	0.4	4	LW
BWL4TF	22.4	21.3	21.8	20.6	21.5	-0.01	1.6	0.7	21.5	-0.01	1.6	0.7	4	LA
C8HAJ8	21.0	21.6	22.0	21.8	21.6	0.05	1.5	0.4	21.6	0.05	1.5	0.4	4	LU
DF8HG3	19.9	20.4	19.9	24.5 *H	21.2	-0.39	1.9	2.2 H	21.2	-0.39	1.9	2.2 H	4	LW
DMPTU4	20.1	20.1	20.4	19.8	20.1	-1.44	1.6	0.2	20.1	-1.44	1.6	0.2	4	LW
DQ7DGJ	21.3	21.6	No Data	22.0	21.6	0.07	1.3	0.3	21.6	0.07	1.3	0.3	3	LZ
DQQWJ6	22.6 L	22.0 L	22.6 L	22.0 L	22.3	0.74	0.3	0.3	22.3	0.74	0.3	0.3	4	BK
E4TM24	21.0	21.0	20.7	20.3 L	20.7	-0.81	1.1	0.3	20.7	-0.81	1.1	0.3	4	BK
EKVJ2E	22.0 L	21.3 L	22.3 L	21.2 L	21.7	0.14	0.7	0.5	21.7	0.14	0.7	0.5	4	LY
FVVC9K	22.7	22.7	22.8	22.6	22.7	1.15	1.3	0.1 L	22.7	1.15	1.3	0.1 L	4	LH
GHZP93	19.9	20.6	20.2	21.6 L	20.6	-0.99	1.9	0.7	20.6	-0.99	1.9	0.7	4	XX
HV62LG	21.5	21.4 L	21.7 L	21.5	21.5	-0.04	0.9	0.1 L	21.5	-0.04	0.9	0.1 L	4	TT
J26WK8	21.2	21.2	20.9	21.9	21.3	-0.24	1.6	0.4	21.3	-0.24	1.6	0.4	4	LY
JM7V7K	19.8	20.1	19.7	20.5	20.0	-1.52	1.7	0.4	20.0	-1.52	1.7	0.4	4	LA
JV2VKD	21.7	20.9	21.7	23.4 H	21.9	0.34	1.8	1.1	21.9	0.34	1.8	1.1	4	LY
K9NKU3	23.8 *	22.3	23.6	23.3	23.2	1.67	1.7	0.6	23.2	1.67	1.7	0.6	4	LU
KLA2JZ	20.8	20.3	20.3 H	20.2	20.4	-1.15	2.1	0.3	20.4	-1.15	2.1	0.3	4	LW
KVXVVW	21.8 H	23.4	23.1	22.1	22.6	1.02	1.7	0.8	22.6	1.02	1.7	0.8	4	LH
MDQBBD	21.8	21.1	21.6	21.2	21.4	-0.11	1.6	0.3	21.4	-0.11	1.6	0.3	4	XX
P69NCU	20.3	21.1	20.2	20.4	20.5	-1.05	1.6	0.4	20.5	-1.05	1.6	0.4	4	LA

Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 35 lb Linerboard - 35E1

TAPPI Official Test Method T826

Report #573 (F)
June 2017

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
PTCHHV	20.7	20.4	20.6	21.0	20.6	-0.91	1.4	0.2	20.6	-0.91	1.4	0.2	4	LY
Q8UM84	22.2	21.7	21.4	21.8	21.8	0.24	1.8	0.3	21.8	0.24	1.8	0.3	4	LY
QGW6H7	21.3	21.4	21.1	21.2 L	21.2	-0.30	1.0	0.1 L	21.2	-0.30	1.0	0.1 L	4	TT
QWC962	21.4	20.9	19.9	21.1	20.8	-0.73	1.6	0.7	20.8	-0.73	1.6	0.7	4	LW
RAEYHT	21.2	21.2	20.5	21.5	21.1	-0.48	1.4	0.4	21.1	-0.48	1.4	0.4	4	LU
RPMAQX	21.7 H	23.5 H	22.0	22.7	22.5	0.94	2.2	0.8	22.5	0.94	2.2	0.8	4	LA
TMVCDZ	22.6 H	22.3	21.1	20.4	21.6	0.05	2.1	1.0	21.6	0.05	2.1	1.0	4	LA
U4ELER	18.9 *	21.1	23.1	21.1 H	21.0	-0.51	1.8	1.7 H	21.0	-0.51	1.8	1.7 H	4	LA
UJTUDB	20.4 L	19.9 L	21.5 L	20.7 L	20.6	-0.92	0.1	0.7	20.6	-0.92	0.1	0.7	4	LA
UYKRE7	20.9	21.3 L	21.1	21.0	21.1	-0.50	1.2	0.2	21.1	-0.50	1.2	0.2	4	LA
UZG3CU	21.9	21.6	23.0	21.5	22.0	0.41	1.8	0.7	22.0	0.41	1.8	0.7	4	LU
W2PYWP	23.6	23.2	23.4	24.1 *	23.6	2.02 *	1.9	0.4	23.6	2.02 *	1.9	0.4	4	XX
W8TZVX	21.7	22.8	21.9	22.5	22.2	0.65	1.6	0.5	22.2	0.65	1.6	0.5	4	LA
Y2ZKJV	23.3	22.0 H	21.5	21.4	22.0	0.49	1.8	0.9	22.0	0.49	1.8	0.9	4	LU
Y7QVTU	21.8	22.4	22.4	22.0	22.1	0.58	1.7	0.3	22.1	0.58	1.7	0.3	4	LW
Y9WFGU	22.3 L	20.9 L	23.4 L	23.1 L	22.4	0.87	0.0	1.1	22.4	0.87	0.0	1.1	4	LA
YEZJ8T	21.5 H	24.4 *H	25.8 X	23.4 H	23.8	2.22 *	3.0	1.8 H	23.8	2.22 *	3.0	1.8 H	4	LU
YR7CWJ	21.9	21.0	21.5	21.2	21.4	-0.16	1.5	0.4	21.4	-0.16	1.5	0.4	4	LW
ZH4EQV	19.1 *	20.3	19.8	20.8	20.0	-1.57	1.5	0.7	20.0	-1.57	1.5	0.7	4	LA
ZXVA3L	23.5	23.9 *	23.4	23.2	23.5	1.91	1.7	0.3	23.5	1.91	1.7	0.3	4	LZ

Consensus (All Labs) Results

Wk Mean	21.42	21.55	21.52	21.64	Month Mean	21.55	Grand Mean	21.55
Avg SDr	1.50	1.60	1.56	1.62	Avg SD	1.58	Avg SD	1.58
SD btwn Labs	1.16	1.15	1.18	1.18	SD btwn Labs	1.01	SD btwn Labs	1.01
Labs Incld	54	54	52	54	SD btwn Wks	0.75	SD btwn Wks	0.75
Labs Excld	1	1	2	1	Labs Incld	54	Labs Incld	54
Labs not Rcvd	0	0	1	0				

Analysis Notes

37Y7YN - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

DQQWJ6 - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

UJTUDB - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

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		

Containerboard Interlaboratory Testing Program

Analysis 228

Roughness - Stylus Method, 56 lb Linerboard - 56A

TAPPI Official Test Method T575

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
37Y7YN	207.5	1.03	25.07		203.3	1.40	10.64	3	LA
97EDPD	196.0	0.65	16.83		186.4	0.60	8.35	4	EV
A46TBC	146.1	-1.02	5.86	L	155.0	-0.87	9.91	4	EV
BLM77F	196.4	0.66	26.30		198.4	1.17	4.87	4	LA
DMPTU4	188.6	0.40	10.29		188.7	0.71	12.08	4	EV
DQ7DGJ	203.7	0.91	23.17		176.6	0.14	25.58	4	LA
DQQWJ6	217.9	1.38	15.74		201.6	1.32	11.38	4	EV
E4W649	160.6	-0.53	11.19		159.9	-0.64	10.36	4	EV
EKVJ2E	107.1	-2.32 *	9.43		120.2	-2.51 *	18.46	2	EV
J26WK8	244.0	2.25 *	22.44		207.4	1.59	30.04 H	4	EV
JM7V7K	176.5	0.00	14.00		158.7	-0.70	11.86	4	EV
K9NKU3	148.0	-0.95	17.96		146.1	-1.29	4.87	4	EV
KLA2JZ	177.7	0.04	16.19		177.5	0.19	0.48 L	4	EV
LWMJV4	158.1	-0.62	17.70		152.9	-0.97	8.83	4	EV
MDQBBD	194.2	0.59	15.43		192.1	0.88	5.69	3	EV
PTCHHV	175.6	-0.03	12.36		174.5	0.05	2.37	4	EV
RAEYHT	184.3	0.26	12.58		179.3	0.27	6.37	4	EV
TMVCDZ	175.3	-0.04	14.36		179.2	0.27	13.80	4	LA
U4ELER	168.7	-0.26	16.45		161.9	-0.55	9.69	2	LA
UJTUDB	153.4	-0.77	31.32	H	157.0	-0.78	20.30	3	LA
UYKRE7	171.9	-0.16	12.96		167.9	-0.27	2.90	4	XX
ZH4EQV	125.3	-1.71	14.13		123.9	-2.34 *	1.58 L	4	LA
ZXVA3L	183.9	0.25	32.66	H	173.1	-0.02	15.34	2	XX

Consensus (All Labs) Results

Month Mean	176.55	Grand Mean	173.52
Avg SD	18.39	Avg SD Months	13.22
SD btwn Labs	29.92	SD btwn Labs	21.26
Labs Incld	23	Labs Incld	22

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42D3

TAPPI Official Test Method T538

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
7LEFAF	363.8	-0.71	7.81		363.8	-0.71	0.00	1	LA
AXJXCT	373.3	0.03	11.48		373.3	0.03	0.00	1	XX
B9F8D9	371.3	-0.13	9.39		371.3	-0.13	0.00	1	PP
BWL4TF	364.3	-0.67	10.43		364.3	-0.67	0.00	1	LA
QDWYYU	386.9	1.10	5.78		386.9	1.10	0.00	1	PP
RPMAQX	365.8	-0.56	9.07		365.8	-0.56	0.00	1	XX
UFTJGB	400.1	2.14 *	26.42	H	400.1	2.14 *	0.00	1	XX
VFBUVA	361.2	-0.92	7.25		361.2	-0.92	0.00	1	TS
W8TZVX	437.3	5.06 X	0.82	L	437.3	5.06 X	0.00	1	XX
WAH8FU	369.3	-0.28	7.15		369.3	-0.28	0.00	1	LA

Consensus (All Labs) Results

Month Mean	372.89	Grand Mean	372.89
Avg SD	12.05	Avg SD Months	0.00
SD btwn Labs	12.72	SD btwn Labs	12.72
Labs Incld	9	Labs Incld	9

Key to Instrument Codes Reported by Participants

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

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
37Y7YN	160.6	2.00 *	5.13		144.5	1.89 *	14.56	3	HY
4JGFWD	96.8	-0.44	9.42		113.0	0.31	16.97	4	SC
7LEFAF	95.0	-0.51	6.24		100.7	-0.31	3.80	4	SC
7MR83W	118.6	0.39	5.32		118.2	0.57	3.71	4	TM
97EDPD	56.8	-1.97 *	3.49		60.1	-2.34 *	4.62	4	TM
AXJXCT	115.8	0.28	3.59		111.8	0.25	3.25	4	HY
BLM77F	136.4	1.07	2.97		132.4	1.28	8.52	4	HY
DMPTU4	166.0	2.20 *	25.10	H	166.3	2.98 X	7.93	4	SC
FQE8AP	90.4	-0.69	8.82		92.4	-0.72	2.20	4	TM
J26WK8	83.0	-0.97	7.58		89.2	-0.88	6.38	4	XX
K9NKU3	94.8	-0.52	6.38		93.9	-0.65	3.30	4	TM
LWMJV4	125.2	0.64	20.07	H	129.9	1.16	5.74	4	HY
P69NCU	102.6	-0.22	7.06		99.5	-0.37	3.66	4	TM
RAEYHT	87.2	-0.81	10.16		89.0	-0.90	3.01	4	TM
RPMAQX	107.0	-0.05	7.48		111.9	0.25	18.61	4	SC
TJYMU8	93.4	-0.57	4.92		96.8	-0.50	3.00	3	TM
UZG3CU	121.2	0.49	7.12		129.3	1.13	23.88 H	3	HZ
W8TZVX	64.7	-1.67	1.02	L	57.0	-2.50 *	5.11	4	LZ
ZH4EQV	105.8	-0.10	13.48		109.7	0.14	4.42	4	TM
ZXVA3L	102.6	-0.22	3.13		100.7	-0.31	4.23	4	TM

Consensus (All Labs) Results

Month Mean	108.38	Grand Mean	106.81
Avg SD	10.00	Avg SD Months	9.74
SD btwn Labs	26.15	SD btwn Labs	19.93
Labs Incld	19	Labs Incld	18

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	106.53	27.55	1.85	16
Modified Scott Bond Mechanics	126.10	14.57	17.72	2

Analysis Notes

W8TZVX - 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
37Y7YN	28.2	0.31	3.07		28.3	0.35	0.75		3
62FTAK	29.6	0.75	4.72		28.0	0.25	1.61		4
6P4K8T	30.0	0.88	1.87		29.8	1.00	3.15		4
7MR83W	24.5	-0.85	1.69		24.7	-1.12	0.43		4
97EDPD	25.0	-0.70	2.52		26.1	-0.58	1.34		4
A46TBC	21.4	-1.84	1.95		24.0	-1.43	3.99	H	4
AXJXCT	22.2	-1.59	2.17		23.3	-1.71	1.24		4
BFC3B8	30.8	1.13	2.95		29.2	0.74	2.05		4
BLM77F	23.6	-1.14	3.05		25.1	-0.99	1.34		4
DMPTU4	29.4	0.69	2.97		29.9	1.03	1.99		4
GHZP93	30.2	0.94	2.59		28.6	0.46	1.20		4
HZ4EA7	28.9	0.53	3.34		28.0	0.25	0.78		4
J26WK8	31.2	1.26	2.95		27.9	0.19	4.05	H	4
K9NKU3	25.8	-0.45	2.41		27.7	0.11	2.22		4
KLA2JZ	26.2	-0.32	1.92		26.8	-0.26	1.07		4
PTCHHV	25.9	-0.42	1.87		28.0	0.24	1.48		4
RAEYHT	28.0	0.25	1.00		28.7	0.52	1.54		4
RPMAQX	28.2	0.31	1.79		29.4	0.82	1.40		4
UYKRE7	27.2	-0.01	0.84		26.6	-0.37	0.47		4
W2PYWP	24.1	-0.99	2.72		24.6	-1.17	2.26		4
W8TZVX	32.6	1.70	0.55	L	32.4	2.07	* 2.29		4
Y7QVTU	22.8	-1.40	12.01	H	24.8	-1.12	1.33		4
ZH4EQV	31.6	1.39	5.50		31.7	1.78	1.31		4
ZXVA3L	25.8	-0.45	1.30		25.0	-1.04	0.84		4

Consensus (All Labs) Results

Month Mean	27.22	Grand Mean	27.44
Avg SD	3.58	Avg SD Months	1.92
SD btwn Labs	3.16	SD btwn Labs	2.40
Labs Incld	24	Labs Incld	24

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
276YFK	18.4	0.03	2.12		17.4	-0.93	1.48	2	XX
37Y7YN	17.8	-0.42	1.85		18.1	-0.32	0.63	3	LA
7LEFAF	19.4	0.79	1.25		19.7	0.98	1.71	4	LA
7MR83W	18.4	0.02	2.03		17.8	-0.59	0.71	4	HG
97EDPD	16.2	-1.62	1.59		17.5	-0.81	1.40	4	LA
97H3RP	18.6	0.18	0.97		19.4	0.74	2.02	4	LP
A46TBC	17.8	-0.42	2.30		16.2	-1.87	2.20	4	XX
AXJXCT	16.8	-1.14	2.28		18.3	-0.14	1.39	4	TP
BLM77F	21.1	2.04 *	1.79		21.0	2.02 *	0.58	4	LP
CWZQ3G	17.9	-0.32	1.41		18.8	0.24	1.24	4	XX
D2PPUH	18.6	0.18	2.24		18.6	0.09	0.00	1	XX
DMPTU4	17.4	-0.72	1.35		17.4	-0.91	1.82	4	HG
DQQWJ6	21.3	2.16 *	1.74		21.7	2.61 *	0.32	4	XX
HZ4EA7	20.2	1.36	2.30		22.5	3.30 X	3.11 H	4	GA
J26WK8	18.6	0.17	1.85		18.9	0.34	0.40	4	LP
K3Y64B	18.6	0.18	1.15		18.4	-0.09	0.93	4	LP
K9NKU3	20.8	1.81	2.10		19.4	0.73	1.53	4	LA
LCYXBF	16.2	-1.62	2.15		18.8	0.23	2.53 H	4	GG
MDQBBD	18.2	-0.15	0.96		17.8	-0.56	0.40	3	LW
TMVCDZ	18.2	-0.09	1.33		17.9	-0.50	0.28	4	LA
UYKRE7	18.4	0.02	2.89		18.4	-0.11	0.37	4	LA
UYLMZW	16.6	-1.32	1.35		17.1	-1.16	0.81	3	LA
W2PYWP	16.7	-1.23	1.83		16.9	-1.26	0.28	4	LA
W8TZVX	19.4	0.80	2.54		20.4	1.54	0.67	4	LA
Y7QVTU	17.3	-0.79	1.57		17.6	-0.69	0.95	3	LP
Y9WFGU	18.6	0.20	2.11		18.6	0.11	0.00	1	TL
ZH4EQV	17.9	-0.34	1.19		18.5	0.02	0.60	4	LP
ZXVA3L	18.7	0.25	3.09 H		18.9	0.31	0.24	4	TD

Consensus (All Labs) Results

Month Mean	18.36	Grand Mean	18.49
Avg SD	1.91	Avg SD Months	1.21
SD btwn Labs	1.34	SD btwn Labs	1.23
Labs Incld	28	Labs Incld	27

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision #4320 Densometer
HG	Technidyne - Hagerty Model #1 and Profile System	LA	L&W Autoline
LP	L&W Air Permeance Tester SE 166	LW	L&W Gurley Densometer, Oil Flotation
TD	TMI Gurley Densometer	TL	Teledyne Gurley Densometer #4110, Oil Flotation
TP	Technidyne Profile/ plus Roughness & Porosity	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
4DE7UR	59.2	57.1	56.5	56.6	57.3	-1.18	2.6	1.3	57.6	-1.11	2.4	1.5	15	LC
4JGFWD	59.5	58.7	56.1	50.9 XH	56.3	-1.61	3.9	3.9 H	57.5	-1.15	3.5	2.6	16	LC
64JL4J	59.6	59.4	59.4	59.3	59.4	-0.33	2.8	0.1 L	59.6	-0.31	3.1	0.3 L	16	LD
64MB7V	61.9	61.1	62.4	61.7	61.8	0.63	2.6	0.6	61.4	0.41	3.3	2.0	16	MB
6P4K8T	58.8	61.1	58.5	59.4	59.4	-0.32	3.1	1.2	58.9	-0.60	3.3	1.7	16	LZ
97EDPD	59.3	60.8	57.5	56.8	58.6	-0.66	3.7	1.8	59.1	-0.49	3.8	1.8	16	XX
9NDTNJ	67.6 X	67.1 *	62.5	63.0	65.0	1.96 *	3.1	2.7	63.9	1.44	2.9	2.4	16	LD
9P6RXB	60.6	59.7	60.2	59.3	60.0	-0.11	2.5	0.6	59.8	-0.23	2.5	0.6 L	16	LC
9TUYME	66.0 *	65.7 *	62.7	67.5 *	65.5	2.13 *	3.6	2.0	65.1	1.91	4.3	4.6	16	LC
A7BBDE	61.9	62.1	62.7	65.4	63.0	1.14	3.4	1.6	62.9	1.02	4.8	1.8	12	TU
ARCAYR	61.6	64.3	61.2	61.2	62.1	0.75	2.6	1.5	61.5	0.47	3.3	1.3	12	LD
AUKLD9	60.1	59.6	60.3	58.9	59.7	-0.21	3.2	0.6	59.6	-0.28	3.1	1.8	16	LD
AXJXCT	62.5	59.7	59.9	61.7	60.9	0.29	3.6	1.4	60.6	0.10	2.9	1.7	16	LC
B6X7BA	58.1	58.3	56.4	59.3	58.0	-0.90	3.3	1.2	58.1	-0.89	3.2	1.9	15	LZ
BFC3B8	62.8	63.7	64.1	61.9	63.1	1.18	3.7	1.0	61.2	0.33	3.6	3.0	16	XX
C8HAJ8	58.5	58.1	61.0	60.4	59.5	-0.30	2.6	1.4	60.3	0.00	2.3	1.0	16	LD
CKLXDL	57.7	59.2	58.1	58.3	58.3	-0.78	3.0	0.6	58.5	-0.73	3.1	1.0	16	TJ
CWZQ3G	61.7	60.9	59.7	60.1	60.6	0.14	3.4	0.9	60.4	0.02	3.1	1.0	16	LD
DQ7DGJ	57.0	58.3	No Data	No Data	57.6	-1.05	2.3	0.9	57.9	-0.97	3.1	1.5	14	LD
DQQWJ6	68.6 X	70.2 X	69.4 X	69.7 X	69.4	3.75 X	3.5	0.7	65.2	1.96 *	2.9	4.7	16	MB
FVVC9K	56.4	56.7	64.9	65.1	60.8	0.21	2.3	4.9 H	61.3	0.39	2.0	2.3	16	LC
GAMNVE	58.6	60.0	60.3	60.9	60.0	-0.11	2.9	1.0	57.9	-0.97	2.4	1.7	12	XX
GCY933	60.0	61.0	59.7	60.6	60.3	0.04	2.3	0.6	59.9	-0.19	2.6	0.6 L	16	LD
H6WGBK	64.1	65.3	64.1	61.9 L	63.8	1.47	1.5	1.4	63.4	1.24	1.7	1.8	16	TD
HV62LG	59.1	60.8 H	59.1 H	58.2 H	59.3	-0.38	5.5	1.1	59.6	-0.30	5.5	1.6	16	TG
J26WK8	59.5	60.0	61.6	60.4	60.4	0.06	2.8	0.9	59.7	-0.25	3.2	1.3	16	LZ
K3Y64B	63.1	62.3	62.0	63.7	62.8	1.04	3.4	0.8	62.5	0.88	3.2	1.0	16	LD
K9NKU3	61.9	55.5	61.7	55.5	58.7	-0.64	3.7	3.6 H	58.9	-0.59	3.9	3.4	16	LC
KVXVVW	61.0	60.8	58.2	60.2	60.0	-0.08	2.6	1.3	59.3	-0.43	2.6	1.6	16	LD
MDQBBD	58.2	54.5 *	53.8 *	57.0	55.9	-1.78	3.2	2.1	54.0	-2.56 *	5.5	4.1	12	XX
P69NCU	62.0	60.4	60.8	60.9	61.0	0.32	3.1	0.7	60.0	-0.14	2.6	2.5	16	LC
PTCHHV	57.9	57.8	60.4	56.0	58.0	-0.90	2.8	1.8	59.1	-0.49	3.5	2.1	16	EN
PZGE73	59.4	58.9	59.8	60.8	59.7	-0.22	3.9	0.8	60.0	-0.13	3.3	1.3	16	EM
QGW6H7	60.6	59.2	57.6	58.9	59.1	-0.47	2.7	1.3	58.9	-0.58	2.7	1.0	16	TH
RAEYHT	58.9	59.1	57.1	58.7 L	58.5	-0.72	2.9	0.9	58.7	-0.65	3.1	1.2	16	LD

Containerboard Interlaboratory Testing Program

Analysis 240

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

TAPPI Official Test Method T809

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
T8H38P	62.0	59.3	59.6	61.3	60.5	0.12	3.7	1.3	60.0	-0.14	2.7	1.1	16	LD
U76Q8Y	60.7	61.6	62.4	62.2	61.7	0.60	1.8	0.8	61.1	0.29	2.0	0.8	12	LD
UJTUDB	55.0 *	56.9	54.4 *	59.3	56.4	-1.57	3.1	2.2	58.1	-0.91	3.3	1.9	12	MB
UYKRE7	59.3	61.4	59.8	60.3	60.2	-0.02	2.3	0.9	61.3	0.38	2.6	1.0	16	LD
UYLMZW	63.4	60.9	65.9 *	64.1	63.6	1.36	3.6	2.1	63.4	1.22	3.6	1.2	12	LC
UZG3CU	60.0 H	58.7	62.3	58.8	60.0	-0.11	5.1	1.7	61.5	0.45	4.5	2.8	16	LC
W8TZVX	55.6	55.0	54.8	55.6	55.2	-2.03 *	2.1	0.4	55.2	-2.07 *	2.9	1.2	16	LD
WBA7UT	84.2 X	89.2 X	85.8 X	84.5 X	85.9	10.46 X	4.4	2.3	66.7	2.54 *	3.2	11.6 H	16	MB
XGVLXQ	48.4 X	45.7 X	48.7 X	49.6 X	48.1	-4.94 X	3.5	1.6	51.4	-3.61 X	2.7	3.9	16	TC
Y2ZKJV	58.6	59.1	60.8	58.2	59.2	-0.43	2.9	1.1	59.6	-0.30	3.4	1.4	16	LD
Y7QVTU	58.7	63.6	59.1	60.8	60.6	0.14	2.6	2.2	60.0	-0.14	3.1	2.0	16	LC
Y83UN3	60.8	61.2	58.2	55.6	59.0	-0.52	3.1	2.6	60.1	-0.11	2.4	1.6	16	LC
YCVU3Y	65.3 *	65.6	65.6	65.7	65.6	2.17 *	3.1	0.2 L	65.7	2.14 *	2.9	1.3	16	TM
YR7CWJ	64.7	63.5	64.0	65.4	64.4	1.69	2.8	0.8	61.6	0.51	2.6	2.2	16	XX

Consensus (All Labs) Results

Wk Mean	60.26	60.30	60.15	60.38	Month Mean	60.23	Grand Mean	60.35
Avg SDr	3.16	3.13	2.95	3.29	Avg SD	3.14	Avg SD	3.25
SD btwn Labs	2.43	2.77	2.87	2.87	SD btwn Labs	2.46	SD btwn Labs	2.48
Labs Incld	45	46	45	44	SD btwn Wks	1.69	SD btwn Wks	2.61
Labs Excld	4	3	3	4	Labs Incld	46	Labs Incld	48
Labs not Rcvd	0	0	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	TM	TMI/Hinde & Dauch
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 250

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

TAPPI Official Test Method T824

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
276YFK	73.7	74.2 L	73.9	73.5	73.8	0.14	1.4	0.3 L	73.5	-0.04	1.7	0.5 L	8	XX
ARCAYR	74.0	74.7	74.0	75.1	74.5	0.43	2.5	0.5	74.0	0.22	2.2	0.8	12	LD
AXJXCT	76.2	77.5	76.8 *	77.3	77.0	1.62	2.2	0.6	77.0	1.87 *	2.1	1.0	16	LC
B6X7BA	75.2	74.3	74.4	74.4	74.6	0.50	2.9	0.4	73.0	-0.31	3.9	4.2 H	15	LZ
C8HAJ8	69.6 *L	69.3 *	72.0	71.3	70.6	-1.42	1.9	1.3	70.5	-1.70	1.8	0.9	16	LD
CWZQ3G	74.9	75.0	74.5	76.3	75.2	0.76	2.4	0.8	74.2	0.33	2.3	1.1	16	XX
H6WGBK	71.5 L	74.1 L	70.8 L	72.7	72.3	-0.60	1.1	1.4	72.1	-0.83	1.5	1.2	16	TD
K3Y64B	76.4	76.1	75.5	76.3	76.1	1.20	2.5	0.4	76.3	1.50	2.7	1.0	16	LD
K9NKU3	64.9 XH	76.6 H	73.1 H	63.2 XH	69.5	-1.94 *	6.3	6.4 H	71.4	-1.20	6.1	5.1 H	16	XX
U76Q8Y	72.4	73.0 L	72.4	71.9	72.4	-0.52	1.9	0.5	72.4	-0.67	1.9	0.4 L	12	LD
UYKRE7	71.5	71.5	71.2	72.5	71.7	-0.89	2.9	0.6	71.6	-1.11	2.5	1.3	16	LD
W8TZVX	76.0	74.8	73.5	75.1	74.9	0.62	2.7	1.0	75.4	0.98	2.2	0.7	16	LD
WBA7UT	72.6	74.1	72.9	72.2	72.9	-0.29	2.9	0.8	73.9	0.14	3.0	0.9	16	MB
Y7QVTU	74.1	75.8	74.7	77.7	75.6	0.96	2.1	1.6	74.4	0.45	2.3	1.9	16	XX
YR7CWJ	71.7	72.5	71.7	73.5	72.3	-0.57	2.4	0.9	74.3	0.37	2.5	2.4	16	LZ

Consensus (All Labs) Results

Wk Mean	73.56	74.24	73.42	74.27	Month Mean	73.54	Grand Mean	73.61
Avg SDr	2.53	2.75	2.61	2.25	Avg SD	2.77	Avg SD	2.80
SD btwn Labs	2.08	2.06	1.66	2.08	SD btwn Labs	2.11	SD btwn Labs	1.83
Labs Incld	14	15	15	14	SD btwn Wks	1.87	SD btwn Wks	2.04
Labs Excld	1	0	0	1	Labs Incld	15	Labs Incld	15
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 255

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

TAPPI Official Test Method T822

	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
27FZZX	46.5	46.8	41.1 H	45.1	44.9	0.34	3.3	2.6 H	44.5	0.47	3.2	2.3	16	LZ
3KEDRE	35.9 *	38.1	35.4 *	37.2	36.7	-2.30 *	2.5	1.2	37.4	-1.27	2.7	1.2	16	LZ
4E73GZ	44.3	42.7	43.1	44.2	43.6	-0.08	2.5	0.8	42.9	0.07	2.2	0.9	16	TH
64JL4J	43.8 H	43.4 H	43.6	38.4 H	42.3	-0.49	4.3	2.6 H	43.5	0.22	4.3	1.7	16	LD
6P4K8T	42.9	44.9	45.4	46.2	44.8	0.33	2.8	1.4	43.5	0.21	2.4	1.7	16	EM
9TUYME	31.4 X	32.5 X	32.5 X	31.0 *	31.8	-3.85 X	2.7	0.8	32.2	-2.55 *	2.7	0.8	16	XX
A7BBDE	36.1 *	38.5	38.1	38.9	37.9	-1.91 *	2.1	1.2	38.3	-1.06	2.1	1.3	12	TU
AXJXCT	46.3	45.7	45.2	45.4	45.6	0.58	2.9	0.5	44.4	0.43	3.0	1.3	16	LC
BUFJ4U	43.1 L	42.4	42.3 L	44.1	43.0	-0.28	1.5	0.8	42.6	0.00	1.2	1.0	16	WK
CKLXDL	39.8 L	36.7 *	38.1	36.3	37.7	-1.96 *	1.9	1.6	36.6	-1.48	1.8	1.5	16	TJ
CWZQ3G	42.1	43.6	42.9	42.1	42.7	-0.37	2.1	0.7	42.1	-0.11	2.9	0.9	16	LD
DQ7DGJ	43.3	46.5	No Data	43.0	44.3	0.14	2.9	1.9	44.5	0.46	2.6	1.8	15	LD
FVVC9K	42.6	41.7	41.3	41.1	41.7	-0.68	1.9	0.7	44.0	0.35	2.0	1.7	16	LD
K3Y64B	45.3	45.5	45.3	46.2	45.6	0.56	1.7	0.4	46.4	0.92	1.8	0.7	16	LD
KVXVVW	44.0	46.7	45.9	45.5	45.5	0.54	2.1	1.1	43.7	0.26	2.1	2.2	16	LD
MDQBBD	47.2	47.8	45.0	47.0	46.7	0.93	2.6	1.2	44.0	0.35	3.8	4.3 H	12	XX
PZGE73	43.7	44.4	42.8	44.2	43.8	-0.02	2.5	0.7	43.7	0.28	2.4	0.7	16	LC
T8H38P	45.7	46.9 H	47.1	46.2	46.5	0.85	3.9	0.6	45.6	0.74	2.5	2.1	16	LZ
UYKRE7	44.3	43.9	43.8	44.7	44.2	0.11	2.2	0.4	44.1	0.38	2.4	0.7	16	LD
UYLMZW	50.2 *	50.4	50.1	50.8	50.4	2.09 *	1.9	0.3	49.1	1.59	1.9	1.1	12	LD
UZG3CU	42.3	42.4	44.2	44.4	43.3	-0.16	2.9	1.1	44.3	0.42	2.8	2.6	16	LD
W8TZVX	46.0	45.8	48.8	46.0	46.6	0.90	2.8	1.5	44.2	0.38	3.0	2.1	16	LD
WBA7UT	43.4	41.2	42.7	42.4	42.4	-0.45	2.4	0.9	42.4	-0.05	2.7	0.6	16	MB
XGVLXQ	29.6 X	28.7 XH	28.7 XH	30.2 *H	29.3	-4.65 X	4.9	0.7	32.9	-2.39 *	3.8	3.6	16	TC
Y83UN3	41.9	47.3 H	45.3	44.8	44.8	0.32	3.3	2.2	42.1	-0.13	2.3	2.3	16	LC
YCVU3Y	46.1	47.9	47.4	46.7	47.0	1.02	2.6	0.8	48.8	1.52	2.5	1.7	16	LD

Consensus (All Labs) Results

Wk Mean	43.61	44.22	43.68	42.77	Month Mean	43.83	Grand Mean	42.61
Avg SDr	2.72	2.68	2.59	2.76	Avg SD	2.64	Avg SD	2.67
SD btwn Labs	3.15	3.35	3.42	4.84	SD btwn Labs	3.12	SD btwn Labs	4.08
Labs Incld	24	24	23	26	SD btwn Wks	1.31	SD btwn Wks	1.86
Labs Excld	2	2	2	0	Labs Incld	24	Labs Incld	26
Labs not Rcvd	0	0	1	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM91

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
27FZZX	14.4	14.7	14.4 H	14.7	14.5	0.16	1.0	0.2	14.5	-0.12	1.1	0.4	16	LA
3HALXG	26.2 X	25.7 X	26.9 X	26.7 XH	26.4	21.25 X	1.3	0.5	26.4	28.53 X	1.3	0.5	4	LH
4DE7UR	15.2	15.0	15.2	14.9	15.1	1.08	1.0	0.2	15.0	1.24	1.0	0.2	15	LW
6P4K8T	15.1	15.3	16.0 *	15.2	15.4	1.69	0.9	0.4	14.6	0.29	1.1	0.7	16	LZ
9P6RXB	14.6	14.4	14.0	14.6	14.4	-0.13	0.8	0.3	14.3	-0.44	0.8	0.3	16	LB
ARCAYR	14.9	14.3	15.1	14.6	14.7	0.49	0.9	0.3	14.9	1.04	1.1	0.3	12	LB
AXJXCT	14.5	14.4	13.5	14.4	14.2	-0.46	0.8	0.5	14.3	-0.47	0.9	0.3	16	LU
BFC3B8	12.8 *	12.3 X	14.2	12.9 X	13.0	-2.52 *	0.9	0.8 H	13.5	-2.39 *	0.9	0.9	16	XX
BWL4TF	14.8 H	14.7 H	14.6 L	14.6 H	14.7	0.39	1.3	0.1	14.9	0.83	1.1	0.4	16	LA
DQ7DGJ	14.4	15.2	No Data	14.6	14.7	0.49	1.0	0.4	14.8	0.79	1.2	0.4	15	LZ
DQQWJ6	13.2 L	14.3 L	14.0 L	14.4 L	14.0	-0.84	0.1	0.5	14.6	0.17	0.1	0.7	16	BK
FVVC9K	15.1	15.0	15.3	15.3	15.2	1.32	0.9	0.1	15.1	1.49	0.8	0.3	16	LH
GCY933	14.3	14.5	14.4	14.1	14.3	-0.26	0.8	0.2	14.3	-0.53	0.8	0.3	16	LB
J26WK8	14.3	14.6	13.7	14.6	14.3	-0.29	1.1	0.4	14.2	-0.82	0.9	0.3	16	LB
K3Y64B	14.8	14.8	14.6	14.5	14.7	0.41	0.9	0.2	14.5	-0.04	0.9	0.2	16	LZ
MDQBBD	14.0	14.8	13.5	13.7	14.0	-0.77	0.9	0.6	14.3	-0.53	1.0	0.6	12	XX
PZGE73	14.7	13.9	14.1	14.2	14.2	-0.42	0.9	0.4	14.2	-0.67	1.1	0.9	16	LB
QDWYYU	14.4	14.9 H	15.3 H	14.5	14.8	0.58	1.2	0.4	18.1	8.62 X	0.7	5.0 H	12	LZ
QGW6H7	14.1	14.3	14.4	14.3	14.3	-0.33	0.7	0.1	14.5	-0.13	0.7	0.2	16	TT
RAEYHT	13.9	14.4	14.1	14.1	14.1	-0.60	1.0	0.2	14.2	-0.82	1.1	0.4	16	LU
U76Q8Y	14.6 L	15.1 L	14.7	14.7 L	14.8	0.56	0.5	0.2	14.4	-0.25	0.5	0.4	12	LA
UJTUDB	13.5 L	13.2 *L	13.6 L	13.8 L	13.5	-1.63	0.0	0.3	16.9	5.67 X	0.1	10.2 H	11	LA
UYKRE7	14.6	14.4	14.5	14.8	14.6	0.26	0.9	0.2	14.4	-0.15	0.9	0.2	16	LB
UYLMZW	16.0 *	15.4	15.3	15.3 H	15.5	1.86	1.1	0.4	15.1	1.45	0.9	0.4	12	LA
W8TZVX	15.1	15.4	14.4	15.2	15.0	1.05	0.8	0.4	15.2	1.67	1.0	0.8	16	LA
XGVLXQ	14.3	14.0	13.8	14.6	14.2	-0.49	1.2	0.3	14.2	-0.64	1.0	0.3	16	TS
Y83UN3	13.5	13.7	13.4	13.7	13.6	-1.60	0.7	0.1	13.8	-1.78	0.7	0.5	16	XX
YCVU3Y	14.7	14.7	14.6	13.8	14.5	0.01	1.1	0.5	14.9	0.82	1.1	0.6	16	LA

Consensus (All Labs) Results

Wk Mean	14.43	14.59	14.41	14.50	Month Mean	14.45	Grand Mean	14.51
Avg SDr	0.92	0.93	0.86	0.95	Avg SD	0.92	Avg SD	0.94
SD btwn Labs	0.67	0.54	0.66	0.47	SD btwn Labs	0.56	SD btwn Labs	0.42
Labs Incld	27	26	26	26	SD btwn Wks	0.36	SD btwn Wks	0.49
Labs Excld	1	2	1	2	Labs Incld	27	Labs Incld	25
Labs not Rcvd	0	0	1	0				

Analysis Notes

DQQWJ6 - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

UJTUDB - May have reported Standard Deviation to CTS instead of the Coefficient of Variation

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LB	L&W Model 152	LH	L&W 282
LU	L&W 52 without moisture correction (was 53)	LW	L&W 53 with moisture correction (was 53M)
LZ	L&W (model not specified)	TS	TMI Monitor/STFI Compression Tester, 17-33
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab