Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #576 (K) - September 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
206	56A1	Mullen Burst of Linerboard, 56 lb Linerboard
215	42D2	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
216	56A1	Ring Crush of Linerboard, Rigid Platen Type, 56 lb Linerboard
223	42D2	STFI of Linerboard, 42 lb Linerboard
224	56A1	STFI of Linerboard, 56 lb Linerboard
228	56A	Roughness - Stylus Method, 56 lb Linerboard
229	42D3	Roughness - Sheffield Method, 42 lb Linerboard
231	42D	Internal Bond Strength, Linerboard, 42 lb Linerboard
234	56A	Coefficient of Static Friction - Inclined Plane, 56 lb Linerboard
237	42D	Air Resistance - Gurley Method, Linerboard, 42 lb Linerboard
240	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
2RBZMF	690.6	-0.97	32.53		742.8	0.06	50.95	4	ET
4C7KFH	740.5	-0.06	26.31		766.9	0.66	32.46	3	LG
8ANP88	844.0	1.83	46.82		830.0	2.24 *	17.26	4	LH
8VUZCA	750.4	0.12	29.86		743.2	0.07	15.53	4	LM
9W3H4E	656.3	-1.59	34.71		712.3	-0.70	42.62	4	LG
DKBD44	708.7	-0.64	8.51	L	729.8	-0.26	15.97	4	ER
DRBW7Z	718.4	-0.46	40.24		719.6	-0.52	33.61	4	LS
DW43GV	753.3	0.18	58.29		710.2	-0.75	37.87	3	LH
EWX42D	685.4	-1.06	30.63		695.0	-1.13	30.01	4	ER
EWX9BU	822.0	1.43	64.31		791.7	1.28	22.72	4	EX
H9JNRQ	755.9	0.22	53.85		766.9	0.66	47.45	4	LG
JCFKXW	758.6	0.27	11.72		754.9	0.36	14.65	4	EX
K37DXM	830.6	1.59	48.67		810.3	1.74	40.73	4	ER
LC96UV	717.6	-0.47	61.12		739.7	-0.02	80.42 H	4	TE
M6KU2C	757.4	0.25	30.24		744.0	0.09	12.89	4	LG
PHKB3X	687.6	-1.02	30.25		699.6	-1.02	12.19	4	LG
PHLAYR	726.8	-0.31	13.79		721.5	-0.47	7.19	4	LS
PUXGVR	791.3	0.87	31.88		762.1	0.54	43.35	3	LS
R2AH6K	529.8	-3.90 X	88.45	H	508.8	-5.78 X	55.94	3	EX
T72WDT	980.2	4.32 X	54.12		958.8	5.45 X	19.05	3	LM
U4RC3X	794.2	0.92	34.35		757.1	0.42	27.71	4	ES
UYDULG	665.2	-1.43	63.00		670.9	-1.73	7.00	4	LL
V2FW9W	801.6	1.06	46.24		747.2	0.17	40.91	4	ER
W6BCQJ	780.6	0.67	52.75		870.1	3.24 X	79.29 H	3	LL
YRWVWJ	665.6	-1.42	16.33		672.5	-1.69	20.88	4	TB

Consensus (All Labs) Results

Month Mean	743.59	Grand Mean	740.37
Avg SD	41.03	Avg SD Months	34.38
SD btwn Labs	54.81	SD btwn Labs	40.09
Labs Incld	23	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	726.14	65.80	17.45	6
Clip sealing	751.76	52.20	8.17	16

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		

Edgewise Compressive Strength, by T811, Corrugated Board - EC10

TAPPI Official Test Method T811

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
8ANP88	34.2	-0.42	0.60	L	33.6	-0.98	1.09	4	TC
DRBW7Z	37.2	0.40	1.43		37.8	0.46	0.60	4	LC
ENMPB6	40.2	1.20	1.65		37.4	0.33	3.17 H	3	LC
EWX42D	34.4	-0.37	2.82	H	34.6	-0.64	0.19 L	3	EN
M6KU2C	40.0	1.16	1.16		40.5	1.43	0.37	4	LE
MB8PWN	30.5	-1.43	0.78		33.0	-1.17	2.06	4	WK
PHKB3X	40.7	1.34	0.88		39.6	1.09	1.42	4	XX
PHLAYR	36.0	0.05	2.10		38.2	0.62	1.59	4	EM
PUXGVR	32.5	-0.90	2.13		33.1	-1.15	1.02	3	EM
X6N2TV	32.0	-1.04	1.87		30.2	-2.15 *	2.95	4	XX

Consensus (All Labs) Results

Month Mean	35.76	Grand Mean	36.41
Avg SD	1.68	Avg SD Months	1.55
SD btwn Labs	3.67	SD btwn Labs	2.89
Labs Incld	10	Labs Incld	9

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LE	L&W Crush Tester 840
TC	TMI Monitor/Compression Tester, Model 17-37	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
2RBZMF	39.3	-0.58	1.43		40.6	0.08	1.21	4	TD
3A9HDB	38.7	-0.86	0.67		40.1	-0.20	1.45	3	TD
4C7KFH	42.4	0.93	1.49		41.5	0.57	2.05	3	MK
6KF3TA	45.5	2.43 *	1.73		43.9	1.80	1.16	4	TG
8ANP88	41.9	0.69	0.74		39.7	-0.42	1.73	4	TX
8N8DEJ	39.6	-0.42	1.43		38.9	-0.83	1.25	4	LD
8VUZCA	43.1	1.27	1.87		42.2	0.91	0.80	4	TG
9PYQG3	41.4	0.42	2.17		41.4	0.47	0.00	1	IM
9UEX3G	37.9	-1.26	1.29		38.9	-0.82	0.78	4	LD
9W3H4E	39.5	-0.50	2.51	H	40.2	-0.15	0.99	4	TJ
DKAR73	37.8	-1.30	0.92		38.9	-0.83	3.28	4	TB
DRBW7Z	42.8	1.11	0.74		41.6	0.62	1.17	4	LC
DW43GV	37.9	-1.24	1.16		37.5	-1.58	0.58	2	EM
ENMPB6	40.5	-0.01	1.34		41.3	0.46	1.13	3	LC
EWX42D	38.1	-1.16	3.08	H	38.0	-1.31	0.95	4	EX
EWX9BU	43.8	1.61	0.66		42.8	1.26	0.85	4	TL
H9JNRQ	39.3	-0.58	0.71		40.0	-0.28	0.91	4	EM
JCFKXW	41.1	0.31	1.65		39.4	-0.56	1.39	4	LD
K37DXM	39.7	-0.40	0.90		40.2	-0.15	0.56	4	EM
LC96UV	42.3	0.86	1.04		42.7	1.20	0.53	4	LD
LEVUZU	45.3	2.32 *	1.32		42.9	1.29	2.58	3	TK
LEXJ6Q	41.2	0.36	1.28		40.5	0.01	0.64	4	LD
M4E8QT	38.6	-0.91	0.99		39.6	-0.49	1.10	4	LC
M6KU2C	39.7	-0.40	1.45		39.8	-0.35	0.41	4	LY
MB8PWN	36.5	-1.90	1.24		36.5	-2.11 *	1.43	4	WK
MCHT9R	38.7	-0.89	1.16		38.6	-1.00	0.83	4	LC
MKGA4Q	40.0	-0.24	1.52		40.2	-0.13	1.35	4	TD
N6JJGT	40.9	0.18	1.37		40.8	0.16	1.51	4	LD
PHKB3X	42.1	0.79	0.66		40.5	-0.01	1.44	4	XX
PHLAYR	41.6	0.55	1.09		43.9	1.83	2.02	4	EM
PUXGVR	39.2	-0.62	1.58		39.8	-0.37	0.61	3	EM
R2AH6K	40.2	-0.15	1.12		36.6	-2.06 *	3.05	4	CT
T72WDT	41.5	0.49	1.37		41.7	0.67	0.42	3	EM
TBRAEG	43.4	1.38	1.03		41.0	0.26	5.17 H	4	LC
THDAQM	40.2	-0.16	1.32		42.5	1.09	3.28	4	TD
U4RC3X	37.8	-1.28	2.06		38.5	-1.06	1.11	4	LD
UYDULG	38.8	-0.84	1.33		38.7	-0.93	0.10 L	4	LC
V2FW9W	38.6	-0.93	1.93		38.4	-1.14	1.78	4	LD
W6BCQJ	40.6	0.05	1.19		39.5	-0.52	1.04	3	BU

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
XCMNMG	47.7	3.47 X	1.53	44.5	2.16 *	2.80	4	LD
Y3HVXL	38.9	-0.77	2.09	39.9	-0.30	0.79	4	LD
YQMPZH	40.7	0.09	1.16	42.3	0.97	1.20	4	EM
YRWVWJ	43.3	1.34	0.77	41.8	0.70	5.52 H	4	LD
ZZBVCF	40.9	0.20	1.21	41.6	0.59	0.86	4	XX

Consensus (All Labs) Results

Month Mean	40.49	Grand Mean	40.48
Avg SD	1.43	Avg SD Months	1.88
SD btwn Labs	2.07	SD btwn Labs	1.87
Labs Incld	43	Labs Incld	43

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EX	Emerson (model not specified)
IM	Instron 5500 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W 830
MK	Mark-10 ESM303	TB	TMI Monitor/Compression Tester, Model 17-70
TD	TMI Digital Crush Tester, Model 17-09	TG	TMI Digital Crush Tester, 17-76
TJ	TLS Compression Tester, Model CDM-5	TK	TLS Compression Tester, Model 5184
TL	Tech-Lab Systems Compression	TX	TMI (model not specified)
WK	Zwick Z005 Crush Tester	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
2GDYCW	108.5	108.3	107.2	101.4 L	106.4	-0.75	9.6	3.4	110.0	0.32	9.6	3.3	16	LB
48GZEM	107.4	98.9 *	107.8	107.4	105.4	-1.04	10.4	4.3	106.3	-0.92	9.8	3.7	16	LC
7446MF	105.0	104.9	108.1	103.6	105.4	-1.03	11.4	1.9	105.0	-1.34	9.5	2.9	16	LA
8ANP88	112.0	111.5	105.8	104.5 H	108.4	-0.14	12.0	3.9	110.8	0.57	11.3	5.5	12	AA
8JDD3A	112.8	108.3	104.5	111.0	109.1	0.06	11.2	3.6	109.9	0.26	9.8	3.9	16	LC
8NQYBF	108.0	105.7	102.8	105.9	105.6	-0.97	11.3	2.1	104.5	-1.51	10.5	2.8	16	LC
9UEX3G	110.1	114.0	104.6	95.7 *	106.1	-0.83	9.0	7.9 H	109.2	0.05	8.9	6.1	16	LC
9Y93RE	111.3	112.6	115.7	102.6	110.5	0.47	12.1	5.6	110.9	0.60	12.6	5.5	16	XX
B3Z4ND	108.9	103.9	102.1	103.8	104.7	-1.25	11.1	2.9	105.3	-1.27	12.3	2.7	14	LC
C882P6	111.0	109.9	108.7	109.8	109.9	0.27	6.7	0.9	109.4	0.09	6.2	1.2	16	TP
CCEH4K	108.3	109.7	110.4	111.5	110.0	0.31	10.7	1.3	108.5	-0.20	9.6	2.9	16	TB
CE4VM3	105.0	105.0	108.2	105.6 L	106.0	-0.87	5.4	1.5	105.3	-1.24	5.1	1.4	16	RE
CE7GK4	102.0 *	109.9	113.8	114.3	110.0	0.31	11.1	5.7	113.2	1.35	11.4	5.0	16	LJ
DKBD44	101.0 *	104.2	104.0	No Data	103.0	-1.72	9.4	1.8	104.0	-1.68	10.2	2.0	15	LZ
DRBW7Z	108.0	102.7 H	104.0	104.3	104.8	-1.22	11.6	2.3	106.6	-0.83	11.3	2.7	16	AH
DXD4L3	104.4	109.2	113.6	109.9	109.3	0.10	8.2	3.8	109.9	0.27	10.5	2.6	16	LA
E9UAVB	111.8	110.4	114.4	112.4	112.3	0.97	11.8	1.7	111.8	0.90	10.6	2.3	16	AH
FA4GWJ	112.9	114.6	116.6	106.8	112.7	1.11	8.8	4.2	112.4	1.09	9.0	3.2	16	LC
FEDW68	107.1	109.8	107.9	103.8	107.2	-0.52	10.7	2.5	108.2	-0.31	11.7	3.8	16	LC
GC8UVW	112.6	113.3	111.9	102.7	110.1	0.35	10.4	5.0	109.9	0.26	10.3	4.0	16	LC
GD2HB7	109.2	109.0	109.9	108.4	109.1	0.06	10.2	0.6	109.1	-0.01	9.6	1.7	16	LA
GU7PTT	104.0	104.7	106.0	110.3	106.3	-0.78	14.2	2.8	106.0	-1.03	12.4	3.6	15	LC
HAUJHP	112.4	111.3	106.6	111.1	110.4	0.42	12.9	2.6	109.7	0.20	11.0	2.3	12	LZ
HDWKF2	112.0	114.4	115.4	111.3	113.3	1.26	11.4	1.9	114.1	1.65	11.9	2.7	16	LZ
JCFKXW	116.5	110.0	109.5	No Data	112.0	0.90	11.4	3.9	115.2	2.02 *	9.9	5.0	15	AH
K9CAHM	108.7	107.2 L	107.7 L	109.2	108.2	-0.20	4.7	0.9	107.4	-0.55	5.6	1.5	12	LA
KD84D4	102.0 *	100.3 *	101.0 *	102.0	101.3	-2.22 *	7.8	0.8	103.6	-1.81	7.8	2.5	16	LC
KMPR4W	107.5	108.4	109.9	110.0	109.0	0.01	5.1	1.2	108.5	-0.19	5.0	1.0	16	AH
LEXJ6Q	108.4	108.0	109.6	104.1	107.5	-0.41	10.7	2.4	110.3	0.38	10.4	3.8	16	AA
LLEZYL	110.9	112.0	106.4	108.0	109.3	0.12	11.0	2.6	108.8	-0.09	10.1	3.8	16	LA
M6KU2C	113.2	113.3	109.2	No Data	111.9	0.87	12.1	2.3	111.6	0.84	15.7	2.7	14	LZ
MEPYUT	108.8 L	108.1	109.1	108.7	108.7	-0.07	5.5	0.4 L	108.9	-0.05	7.8	0.4 L	16	LJ
MNJWXV	118.1 *	111.7	112.6	109.8	113.1	1.21	10.3	3.6	106.9	-0.74	10.7	6.3	15	LC
N6JJGT	112.8	112.1	110.7	111.0	111.7	0.80	9.3	1.0	112.3	1.05	10.2	1.6	16	LA
NB2UQN	110.5 L	113.0 L	112.8 L	113.6 L	112.5	1.03	3.7	1.4	112.3	1.04	3.9	1.2	16	XX

Containerboard Interlaboratory Testing Program

Analysis 205

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

TAPPI Official Test Method T807

Report #576 (K)
September 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
NDEGBM	110.0	103.0	105.2	107.0	106.3	-0.77	10.2	3.0	109.2	0.04	10.8	11.0 H	16	AH
NGVPW2	109.0	106.3	104.8	103.7	105.9	-0.87	9.7	2.3	106.5	-0.86	10.4	2.3	13	LC
NJH9XY	108.8	110.3	104.6	109.4	108.3	-0.19	9.7	2.5	107.9	-0.40	10.3	3.2	16	XX
PHLAYR	111.2	112.2	109.0	110.7	110.8	0.53	10.5	1.3	104.3	-1.59	9.4	6.7	16	RE
PQDLDT	109.5	108.1	105.5	109.6	108.2	-0.22	9.7	1.9	108.3	-0.27	10.8	5.4	16	LA
R2AH6K	119.0 *	117.0	112.7	113.4	115.5	1.92	10.7	3.0	113.3	1.40	13.0	3.2	16	XX
TBRAEG	107.4	104.3	104.7	103.7	105.0	-1.14	10.1	1.6	108.9	-0.07	11.1	3.4	16	LA
TNWPYQ	115.8	116.9	113.1	111.2	114.3	1.55	11.1	2.6	113.6	1.48	10.9	2.1	16	AX
TZBM7F	106.9	108.2	113.8	112.7	110.4	0.43	10.5	3.4	110.8	0.57	12.2	3.1	16	LC
U4RC3X	109.3	106.3	107.0	105.3	107.0	-0.57	11.7	1.7	106.6	-0.82	11.5	2.6	16	LA
UP9RH4	117.7 *	117.8 *	116.8	116.4	117.2	2.41 *	8.7	0.7	113.0	1.30	9.2	5.6	16	LC
V2FW9W	104.7	101.8	108.0	106.6	105.3	-1.07	8.4	2.7	106.4	-0.90	9.7	3.1	16	AH
V3N72U	108.8	103.2	107.8	105.1	106.2	-0.79	11.3	2.5	107.1	-0.66	10.7	2.7	16	TB
WH2Y7C	108.0	109.6	115.3	110.4	110.8	0.55	12.0	3.1	110.9	0.60	12.4	2.1	16	LA
X97DDJ	110.0	106.9	112.2	107.5	109.1	0.06	13.2	2.5	111.6	0.82	12.8	2.4	16	LA
XD28BK	110.1	114.9	114.9	119.2 *	114.8	1.71	10.6	3.7	116.3	2.39	*11.5	3.2	16	LA
Y3HVXL	106.5	102.0	101.1	96.7 *	101.6	-2.15 *	9.7	4.0	103.2	-1.96	* 8.6	2.9	16	LA
Y3KL2J	109.5	109.8	109.3	112.0	110.2	0.36	10.0	1.3	108.0	-0.35	11.4	3.3	16	LC
Z9JP6M	109.6	109.6	107.6	110.4	109.3	0.11	10.8	1.2	108.7	-0.13	10.3	1.3	16	LA
ZDVD6J	117.5 *	No Data	113.3	111.9	114.2	1.55	9.4	2.9	109.8	0.23	11.2	3.6	15	TB

Consensus (All Labs) Results

Wk Mean	109.68	108.86	109.00	108.02	Month Mean	108.93	Grand Mean	109.09
Avg SDr	10.70	10.02	10.33	9.83	Avg SD	10.24	Avg SD	10.40
SD btwn Labs	3.92	4.33	4.10	4.55	SD btwn Labs	3.43	SD btwn Labs	3.03
Labs Incld	55	54	55	52	SD btwn Wks	2.96	SD btwn Wks	3.72
Labs Excld	0	0	0	0	Labs Incld	55	Labs Incld	55
Labs not Rcvd	0	1	0	3				

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
2GDYCW	116.1	118.8	119.8 L	119.8	118.6	1.60	8.0	1.7	118.6	1.64	7.2	2.4	12	LB
48GZEM	108.2	114.5	109.9	109.0	110.4	-1.06	9.6	2.8	112.5	-0.48	11.3	3.7	12	LC
7446MF	105.4 *	105.1	114.2	111.4	109.0	-1.50	12.0	4.5	108.4	-1.88	11.5	3.8	12	LA
8ANP88	110.8	116.3	119.0	115.8	115.4	0.57	10.0	3.4	114.3	0.16	10.8	4.8	12	AA
8NQYBF	111.1	107.7	112.0	114.2	111.3	-0.77	10.2	2.7	110.0	-1.35	10.3	3.5	12	LA
9UEX3G	112.1	114.8	111.9	103.6 *	110.6	-0.99	11.3	4.9	111.4	-0.87	12.1	4.2	12	LC
9Y93RE	112.8	117.9	117.6	112.4	115.2	0.48	11.7	3.0	113.4	-0.16	12.5	3.8	12	XX
B3Z4ND	109.6	108.7	112.8	110.3	110.3	-1.08	10.0	1.8	109.8	-1.40	10.1	1.6	9	LC
C882P6	113.1	112.7	113.7	112.0	112.9	-0.26	6.7	0.7	113.0	-0.30	6.8	0.8 L	12	TP
CCEH4K	120.3	116.2	125.0 *	115.4	119.2	1.79	12.8	4.4	120.0	2.10	*11.8	3.8	12	TB
CE4VM3	111.4	112.8	117.4	112.8	113.6	-0.02	7.5	2.6	114.4	0.18	7.5	3.4	12	RE
CE7GK4	114.9	108.3	111.1	105.5 *H	109.9	-1.20	13.3	4.1	112.4	-0.52	11.7	3.8	12	LJ
DKBD44	112.2	102.2 *	105.4	No Data	106.6	-2.29 *	12.0	5.1	108.7	-1.79	11.5	3.4	11	LZ
DRBW7Z	104.4 *	106.1	115.1	109.4	108.8	-1.59	7.1	4.7	110.4	-1.19	9.2	5.1	12	AH
DXD4L3	113.6	109.8	123.0	120.1	116.6	0.95	8.7	6.0	116.6	0.94	9.0	4.3	12	LA
E9UAVB	114.8	111.0	119.6	115.4	115.2	0.49	11.2	3.5	116.1	0.75	9.9	2.8	10	AH
FA4GWJ	118.8	115.6	112.5	118.7	116.4	0.88	12.1	3.0	116.5	0.89	11.8	3.2	12	LC
FEDW68	113.3	115.8	109.4	113.5	113.0	-0.22	10.5	2.7	113.3	-0.19	11.6	3.0	12	LC
GC8UVW	117.1	112.7	110.5	112.5	113.2	-0.15	10.3	2.8	112.5	-0.47	10.1	2.7	12	LC
GD2HB7	114.6	111.2	113.6	116.6	114.0	0.11	10.1	2.3	113.4	-0.15	10.5	2.6	12	LA
GU7PTT	119.4	104.9	109.0	105.9	109.8	-1.25	12.1	6.6	111.4	-0.86	13.2	4.4	10	LC
HAUJHP	112.2	120.2	110.0	117.8	115.1	0.44	11.3	4.8	113.9	0.00	12.4	3.9	12	LZ
HDWKF2	116.1	115.8	117.0	110.8	114.9	0.41	11.6	2.8	119.0	1.75	11.7	4.3	12	LZ
JCFKXW	122.7 *	117.5	118.5	No Data	119.6	1.90	8.7	2.8	119.8	2.04	*10.3	4.1	11	AH
K9CAHM	115.3 L	113.8 L	112.2 L	114.5 L	114.0	0.09	3.5	1.3	115.5	0.56	5.6	2.0	8	LA
KD84D4	111.9	110.4	109.8	112.5	111.2	-0.82	9.4	1.3	109.8	-1.42	10.4	2.0	12	LA
KMPR4W	112.9 L	111.8	113.3	113.7	112.9	-0.24	6.3	0.8	112.7	-0.41	5.5	1.2	12	AH
LEXJ6Q	114.0	119.4	116.0	111.1	115.1	0.47	8.5	3.5	115.7	0.63	8.9	3.9	12	AA
LLEZYL	110.7	119.8	95.4 X	115.7	110.4	-1.07	11.7	10.7 H	112.7	-0.42	12.1	7.0	12	LA
M6KU2C	118.9	120.3	116.7	No Data	118.6	1.60	11.2	1.8	117.2	1.15	12.7	5.0	11	LZ
MEPYUT	114.0	114.3	114.4	114.1	114.2	0.18	7.8	0.2 L	113.6	-0.08	9.9	0.4 L	12	LJ
MNJWXV	119.8	117.0	110.3	120.9	117.0	1.07	12.7	4.8	112.6	-0.43	12.0	5.2	12	LC
N6JJGT	118.4	116.6	117.4	116.8	117.3	1.17	8.4	0.8	116.7	0.97	9.2	1.8	12	LA
NB2UQN	126.6XL	125.2 *	126.4 *L	125.4 *L	125.9	3.95 X	4.5	0.7	124.5	3.65	X 5.3	3.2	11	XX
NDEGBM	118.0	111.2	117.6	113.6	115.1	0.46	11.0	3.3	111.6	-0.78	10.4	4.4	12	AH

Containerboard Interlaboratory Testing Program
Analysis 206
Bursting Strength (Mullen), 56 lb Linerboard - 56A1
TAPPI Official Test Method T807

Report #576 (K)
September 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
NGVPW2	108.6	107.7	113.4	113.2	110.7	-0.96	9.1	3.0	111.3	-0.89	10.1	2.9	5	LC
NJH9XY	110.3	107.0	116.2	113.0	111.6	-0.66	9.2	3.9	113.1	-0.27	10.3	3.8	12	XX
PHLAYR	111.0	114.0	105.6	115.5	111.5	-0.70	10.6	4.4	105.0	-3.06	X10.8	5.8	12	RE
PQDLDT	120.3 L	116.4	115.6	115.0	116.8	1.02	6.8	2.4	116.0	0.72	8.2	2.8	12	LA
R2AH6K	109.3 H	116.2	120.0	117.8	115.8	0.69	14.9	4.6	114.4	0.17	11.8	5.1	12	XX
TBRAEG	119.5	121.7	104.0 *	117.4	115.7	0.65	11.2	8.0 H	114.8	0.33	11.0	5.0	12	LA
TNWPYQ	111.6	119.0	116.7	117.2	116.1	0.79	12.2	3.2	116.4	0.88	12.1	3.2	12	AX
TZBM7F	108.6	116.3	110.5	121.7 H	114.3	0.19	12.4	5.9	115.3	0.49	11.9	4.3	12	XX
U4RC3X	107.8	109.4	111.3	109.1	109.4	-1.38	12.8	1.4	110.7	-1.09	10.6	2.0	12	LA
UP9RH4	114.7	116.0	115.6	107.2	113.3	-0.11	9.4	4.2	112.1	-0.61	10.8	5.5	12	LC
V2FW9W	112.1	107.4	111.7	111.3	110.6	-0.99	8.2	2.2	113.4	-0.17	9.0	4.3	12	AH
V3N72U	108.9	107.2	107.3	109.6	108.3	-1.75	10.4	1.2	111.6	-0.78	10.4	3.6	12	TB
WH2Y7C	116.1	110.6	121.0	116.3	116.0	0.75	10.3	4.2	115.7	0.64	11.2	4.4	12	LA
X97DDJ	123.6 *	109.7	116.8	110.4	115.1	0.47	10.3	6.5	116.3	0.84	12.3	5.0	12	LA
XD28BK	116.8	121.4 H	119.8	118.4	119.1	1.75	13.6	2.0	121.3	2.57	*11.0	3.3	12	LA
Y3HVXL	111.5	111.4	110.7	110.7	111.1	-0.84	10.3	0.4 L	110.5	-1.16	8.5	2.7	12	LA
Y3KL2J	115.0	115.9 L	114.5 L	116.3 L	115.4	0.56	4.8	0.8	112.9	-0.33	8.8	2.9	12	LC
Z9JP6M	113.4 H	113.4	114.3	115.0	114.0	0.11	11.9	0.8	114.0	0.03	10.7	1.3	12	LA
ZDVD6J	116.2	No Data	112.1	115.1 H	114.5	0.26	14.1	2.1	114.0	0.03	12.0	3.6	11	TB

Consensus (All Labs) Results

Wk Mean	113.85	113.53	114.32	113.95	Month Mean	113.68	Grand Mean	113.87
Avg SDr	11.12	10.27	9.93	10.22	Avg SD	10.48	Avg SD	10.58
SD btwn Labs	4.21	4.94	4.70	4.27	SD btwn Labs	3.09	SD btwn Labs	2.90
Labs Incld	53	53	53	51	SD btwn Wks	3.83	SD btwn Wks	3.73
Labs Excld	1	0	1	0	Labs Incld	53	Labs Incld	52
Labs not Rcvd	0	1	0	3				

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
2GDYCW	90.6	90.9	89.2	92.6	90.8	0.64	3.7	1.4	87.7	-0.13	3.9	2.3	16	LC
48GZEM	95.3	89.6	90.1	91.6	91.7	0.86	4.5	2.6	91.2	0.75	3.9	2.1	16	LC
6KF3TA	88.4	88.9	90.1	88.2	88.9	0.13	3.1	0.9	90.1	0.49	3.1	1.4	16	TH
7446MF	82.2	81.6	101.3 *	91.5	89.2	0.20	4.1	9.3 H	94.2	1.53	4.3	9.9 H	16	LC
87BPBF	90.9 H	93.0 H	92.0	94.3	92.5	1.09	6.2	1.4	85.0	-0.80	6.3	6.2	16	MB
8NQYBF	91.3	85.1 H	87.2	87.3 H	87.7	-0.17	6.7	2.6	85.2	-0.76	4.7	4.5	16	LZ
9837ZG	91.0	90.1	91.7	92.6	91.3	0.78	4.1	1.0	91.4	0.82	3.6	1.6	16	LD
9UEX3G	87.4	86.5	85.9	85.3	86.3	-0.55	3.9	0.9	87.5	-0.18	3.8	1.4	16	LD
9W3H4E	88.8	88.6	81.7	82.6	85.4	-0.77	2.6	3.8	87.1	-0.26	2.6	3.9	16	TJ
B3Z4ND	86.2	90.3	86.7	88.0	87.8	-0.15	4.6	1.8	86.9	-0.32	5.4	10.0 H	13	LC
C882P6	89.9	88.2	91.7	89.1	89.7	0.35	4.5	1.5	89.3	0.28	3.9	1.2	16	TH
CCEH4K	100.0 *	99.2 *	99.7 *	101.8 X	100.2	3.10 X	3.9	1.1	98.3	2.55 *	4.5	2.1	16	LX
CE4VM3	83.1	84.8	83.8	84.9	84.2	-1.11	2.8	0.8	82.0	-1.55	3.0	4.5	16	LZ
CE7GK4	86.9	89.6	90.6	91.5	89.6	0.33	4.4	2.0	88.3	0.02	4.6	1.8	16	LD
DKBD44	81.5	83.6	84.5	87.2	84.2	-1.10	3.9	2.4	85.2	-0.76	3.9	2.1	16	LD
DRBW7Z	92.3	90.8	90.6	92.2 H	91.5	0.81	5.9	0.9	91.0	0.71	4.5	1.1	16	LC
DW43GV	63.3 XH	70.5 XH	68.2 XH	71.8 XH	68.5	-5.24 X	8.3	3.8	68.6	-4.94 X	8.5	4.4	12	EM
DXD4L3	80.7	77.1 *	84.7	85.0	81.9	-1.72	3.6	3.8	81.4	-1.71	3.8	2.9	16	TU
ENMPB6	84.4	85.6	85.4	83.1	84.6	-0.99	3.7	1.1	84.6	-0.90	3.7	1.1	4	LC
EVPXHX	79.7	77.6 *	77.4 *	84.5	79.8	-2.26 *	5.2	3.3	79.8	-2.11 *	5.0	3.4	12	LC
EWX42D	83.5	81.7	81.2	83.0	82.3	-1.59	3.8	1.1	82.8	-1.37	3.7	2.0	16	EN
FEDW68	90.8	91.9	92.1	92.5	91.8	0.90	3.8	0.7	90.2	0.50	3.9	1.6	16	LD
GD2HB7	93.2 H	92.4	91.2	93.6	92.6	1.11	5.3	1.1	91.5	0.85	4.4	1.2	15	LD
H9JNRQ	83.1	84.9	84.9	84.1	84.2	-1.09	3.4	0.9	85.6	-0.64	4.0	1.6	16	EM
HDWKF2	79.1 *	84.9	80.6	88.4	83.2	-1.36	4.0	4.2	83.5	-1.17	3.9	3.0	16	LC
JGU73X	94.3	94.3	96.2	94.8	94.9	1.71	2.9	0.9	93.3	1.30	3.6	1.4	16	LD
K37DXM	88.7	87.9 L	88.5	87.4	88.1	-0.08	3.2	0.6	88.2	0.00	3.1	0.7 L	16	EM
K9CAHM	90.8	88.2 L	89.2	89.2	89.4	0.25	2.5	1.1	89.2	0.27	2.3	0.8 L	12	LZ
KD84D4	88.6	88.0	89.3	87.3	88.3	-0.02	3.0	0.8	86.2	-0.51	3.1	2.9	16	LD
LC96UV	92.3	92.1	93.0	90.3	91.9	0.93	3.2	1.2	92.1	0.99	3.2	1.0 L	16	LD
LEVUZU	88.0	88.5	87.6	88.4	88.1	-0.07	3.4	0.4 L	88.5	0.09	3.1	0.8 L	16	MB
LEXJ6Q	86.5	86.4	88.2	87.8	87.2	-0.31	3.8	0.9	86.0	-0.54	3.6	3.5	16	LD
LLEZYL	95.3	94.3	94.0	65.1 XH	87.2	-0.32	5.3	14.7 H	91.6	0.86	4.8	9.5 H	16	LC
M6KU2C	88.4	88.9	82.1	No Data	86.5	-0.50	2.6	3.8	87.7	-0.11	3.4	2.0	14	LG
MEPYUT	89.0	88.3	88.3	88.3	88.5	0.02	3.3	0.4 L	88.3	0.04	3.4	0.9 L	16	LD

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D2

TAPPI Official Test Method T822

Report #576 (K)
September 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
MKGA4Q	95.1	91.9	91.7	90.5	92.3	1.02	2.6	2.0	91.9	0.94	1.8	1.3	16	TD
MNJWXV	87.7	94.1	90.5	92.5	91.2	0.74	4.5	2.7	90.7	0.64	4.0	2.1	15	LD
N6JJGT	90.3	91.3	90.2	91.0	90.7	0.61	3.6	0.5 L	91.0	0.71	3.8	0.7 L	16	LD
NB2UQN	91.5	84.6	83.2	81.1 *	85.1	-0.86	4.4	4.5	89.1	0.23	4.5	3.9	16	LD
NDEGBM	94.1	95.6 H	94.1	96.1	95.0	1.73	5.8	1.0	83.2	-1.25	6.4	9.6 H	16	LC
NGVPW2	95.2	87.1	87.8	92.6	90.7	0.60	5.6	3.9	89.7	0.39	4.6	2.4	13	LC
PHLAYR	90.4	92.2	93.1	92.4	92.0	0.95	4.4	1.1	91.7	0.88	4.1	3.2	16	EM
PQDLDT	90.1	91.0	89.7	89.0	89.9	0.40	3.7	0.8	88.5	0.07	3.9	1.8	16	LD
T72WDT	87.5	89.8	90.4	88.1	88.9	0.15	3.7	1.3	89.2	0.25	3.6	1.2	11	EM
TBRAEG	89.4 H	94.8	89.6	93.1	91.7	0.88	6.4	2.7	90.6	0.62	5.5	6.3	16	LC
TNWPYQ	79.6 *	80.1 *	78.7 *	81.8 *	80.0	-2.20 *	3.7	1.3	80.0	-2.07 *	4.3	5.2	16	LC
UP9RH4	85.1	85.2	85.2	86.1	85.4	-0.78	2.8	0.5 L	83.7	-1.13	3.8	2.8	16	LC
V2FW9W	88.7	89.1	86.8	92.5	89.3	0.23	4.6	2.4	87.3	-0.21	4.1	1.9	16	LD
V3N72U	85.9	84.8	89.7	89.9	87.6	-0.22	3.9	2.6	88.2	0.02	4.0	1.9	16	LC
VQWH8F	66.0 X	68.0 X	65.9 X	66.5 X	66.6	-5.73 X	3.4	1.0	66.6	-5.45 X	3.4	1.0 L	4	LD
X24B6C	94.5	92.4	90.9 H	91.9	92.4	1.06	5.2	1.5	92.8	1.16	4.7	1.4	16	EM
X97DDJ	95.8	95.0	97.5	95.1	95.8	1.96 *	4.6	1.1	97.1	2.26 *	4.4	1.7	16	LD
XD28BK	92.5	90.9	98.7 *	91.0	93.3	1.29	3.4	3.7	92.4	1.06	4.0	2.7	16	LZ
XK2AVK	85.7	85.6	87.0	91.1	87.3	-0.28	3.2	2.6	88.6	0.11	3.3	5.6	16	TH
Y3HVXL	90.7	90.1	90.9	91.2	90.7	0.62	3.5	0.5 L	89.3	0.27	3.3	1.5	16	LD
Y3KL2J	90.6	88.1	88.2	91.3	89.5	0.30	3.9	1.6	88.8	0.16	3.8	1.4	16	LD
YQMPZH	82.8	85.7	82.5	83.3	83.6	-1.26	3.7	1.5	83.6	-1.16	3.7	1.5	4	EM
ZDVD6J	82.2	No Data	79.9 L	82.4	81.5	-1.80	3.7	1.4	79.9	-2.09 *	4.9	7.8 H	15	LZ
ZWMP9B	71.4 XH	No Data	89.8	91.4	84.2	-1.10	6.7	11.1 H	87.8	-0.10	5.6	6.4	15	MB

Consensus (All Labs) Results

Wk Mean	88.71	88.60	88.71	89.10	Month Mean	88.38	Grand Mean	88.18
Avg SDr	4.14	4.21	4.11	4.13	Avg SD	4.22	Avg SD	4.09
SD btwn Labs	4.69	4.42	5.01	3.79	SD btwn Labs	3.80	SD btwn Labs	3.96
Labs Incld	56	55	57	54	SD btwn Wks	3.41	SD btwn Wks	3.87
Labs Excld	3	2	2	4	Labs Incld	56	Labs Incld	57
Labs not Rcvd	0	2	0	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
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
2GDYCW	143.2	138.9	138.8	143.5	141.1	0.53	4.8	2.6	136.4	-0.17	4.6	4.0	12	LC
48GZEM	136.6	139.1 H	141.6	137.4 H	138.7	0.13	11.9	2.2	141.2	0.65	10.7	6.0	12	LC
6KF3TA	138.5	137.9	136.9	135.9	137.3	-0.11	4.3	1.2	140.4	0.52	4.4	2.4	12	TH
7446MF	128.8	132.4	159.0 *	143.1	140.8	0.49	4.8	13.6 H	142.7	0.91	5.4	7.6	12	LC
87BPBF	152.5 H	147.9 H	150.4 H	141.6 H	148.1	1.70	11.2	4.7	144.8	1.27	8.3	4.1	12	MB
8NQYBF	136.5	132.9	138.9	130.2	134.6	-0.56	5.8	3.9	134.5	-0.49	5.6	6.2	12	LZ
9837ZG	147.0	144.4	141.0	139.4	142.9	0.84	4.8	3.4	141.6	0.72	4.6	3.0	12	LD
9UEX3G	130.0	137.8	133.3	135.3	134.1	-0.64	4.3	3.3	136.3	-0.18	4.7	3.3	12	LD
9W3H4E	136.4	139.7	129.0	129.4	133.6	-0.72	3.8	5.3	136.5	-0.16	3.6	4.7	12	TJ
B3Z4ND	135.3	141.3	143.5	139.9	140.0	0.35	4.4	3.5	136.8	-0.10	5.2	9.4 H	9	LC
C882P6	135.8	136.8	139.5	136.3	137.1	-0.14	4.9	1.7	137.6	0.03	4.2	1.5	12	TH
CCEH4K	158.2 *	160.1 X	157.4 *	157.6 X	158.3	3.42 X	6.3	1.2	155.1	3.02 X	5.8	4.1	12	LY
CE4VM3	135.8	136.4	135.9	138.1	136.5	-0.23	5.4	1.0	135.0	-0.41	4.2	2.6	12	LZ
CE7GK4	135.2	143.9	141.6	141.7	140.6	0.45	5.1	3.7	139.7	0.39	4.9	3.9	12	LD
DKBD44	135.8	133.6	136.3	138.8	136.1	-0.31	4.1	2.1	134.6	-0.47	4.8	3.1	12	LD
DRBW7Z	142.6	144.1	146.3	146.1	144.8	1.15	4.2	1.8	142.6	0.89	3.9	3.2	12	LC
DW43GV	102.4XH	104.3 XH	101.5 XH	102.4 XH	102.7	-5.91 X	13.6	1.1	96.7	-6.95 X	12.9	8.4	12	EM
DXD4L3	124.2 L	123.9 *L	128.8	129.8	126.7	-1.89	3.5	3.0	125.3	-2.07 *	4.1	3.0	12	TU
ENMPB6	131.8	132.5	133.9	130.7	132.2	-0.95	3.7	1.3	132.2	-0.88	3.7	1.3	4	LC
EVPXHX	121.4 *	124.6 *	120.3 *	134.2	125.1	-2.15 *	6.6	6.3	125.2	-2.08 *	5.9	4.6	12	LC
EWX42D	131.1	132.0	127.0	129.9	130.0	-1.33	4.2	2.2	128.3	-1.56	4.3	2.4	12	EN
FEDW68	142.2	143.0	140.8	144.9	142.7	0.81	4.7	1.7	142.3	0.83	4.3	1.7	12	LD
GD2HB7	138.1	137.9	139.8	137.3	138.3	0.06	3.9	1.1	139.2	0.31	4.0	1.6	12	LD
H9JNRQ	132.9	135.7	134.4	133.5	134.1	-0.64	4.1	1.2	136.0	-0.24	4.5	3.6	12	EM
HDWKF2	122.6	129.0	132.4	132.2	129.1	-1.49	4.5	4.6	129.8	-1.30	4.5	3.8	12	LC
JGU73X	145.4	146.4 L	147.7	147.5	146.7	1.48	3.3	1.1	144.2	1.17	4.1	2.8	12	LD
K37DXM	139.8	139.9	142.8	141.2	140.9	0.50	3.3	1.4	139.9	0.43	3.0	2.0	12	EM
K9CAHM	140.2	144.8 L	143.1	142.0	142.5	0.77	2.8	1.9	139.9	0.42	3.7	3.3	8	LZ
KD84D4	136.3	136.3	138.3	135.5	136.6	-0.22	3.9	1.2	133.2	-0.71	3.6	3.6	12	LD
LC96UV	145.1	146.0	141.9	141.5	143.6	0.95	3.6	2.3	143.0	0.95	3.7	1.8	12	LD
LEVUZU	137.7	137.7	138.5	137.1	137.7	-0.03	3.7	0.6 L	138.3	0.15	3.3	0.6 L	12	MB
LEXJ6Q	139.6	136.1	136.0	135.9	136.9	-0.17	3.6	1.8	133.5	-0.67	3.6	2.9	12	LD
LLEZYL	149.0	156.0 *	152.8	104.3 XH	140.5	0.43	7.6	24.3 H	145.9	1.46	5.8	13.4 H	12	LC
M6KU2C	137.6	135.5	132.0	No Data	135.0	-0.49	4.3	2.8	136.7	-0.12	3.5	2.1	11	LY
MEPYUT	137.5	137.3	137.2	137.5	137.4	-0.09	4.7	0.2 L	137.9	0.08	5.7	0.4 L	12	LD

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 56 lb Linerboard - 56A1

TAPPI Official Test Method T822

Report #576 (K)
September 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
MKGA4Q	140.3 L	139.8 L	142.5 L	140.5 L	140.8	0.48	1.7	1.2	139.3	0.33	2.6	2.9	12	TD
MNJWXV	132.0	142.1	136.3	139.0 L	137.4	-0.09	3.5	4.3	139.0	0.27	3.8	4.6	12	LD
N6JJGT	144.2	142.3	143.3	143.2	143.3	0.90	3.9	0.8 L	143.5	1.03	4.0	1.6	12	LD
NB2UQN	144.0	137.0	138.6	131.9	137.9	-0.01	5.1	5.0	139.7	0.39	5.2	3.9	12	LD
NDEGBM	139.3	140.6 H	141.5 H	141.7 H	140.8	0.48	9.8	1.1	130.8	-1.12	7.3	9.9 H	12	LC
NGVPW2	145.1	147.8	144.5	145.4	145.7	1.30	5.2	1.4	144.2	1.16	5.0	3.7	5	LC
PHLAYR	134.2	140.7	139.9	140.9	138.9	0.16	4.1	3.2	137.7	0.05	4.3	5.8	12	EM
PQDLDT	132.0	134.1	131.9	135.8	133.5	-0.75	4.5	1.9	133.0	-0.74	4.0	2.5	12	LD
T72WDT	138.0	137.2	139.6	138.5 L	138.3	0.07	3.6	1.0	137.4	0.00	3.8	2.4	8	EM
TBRAEG	142.9	146.9	147.6 H	144.0	145.4	1.24	7.1	2.3	145.2	1.33	6.4	4.3	12	LC
TNWPYQ	124.3 H	126.8	126.6	127.6 *	126.3	-1.94 *	10.3	1.4	127.3	-1.73	7.2	6.6	12	LC
UP9RH4	135.6	134.7	136.4	135.3	135.5	-0.41	5.0	0.7 L	131.6	-0.99	4.4	3.3	12	LC
V2FW9W	138.6	141.3	137.9	138.8	139.2	0.21	4.2	1.5	136.5	-0.15	4.2	2.7	12	LD
V3N72U	138.7	140.5	145.1	143.8	142.0	0.69	4.1	3.0	144.0	1.14	5.8	3.5	12	LC
VQWH8F	106.4 X	106.8 X	102.7 X	105.6 X	105.4	-5.46 X	6.3	1.8	116.6	-3.55 X	4.9	12.1 H	8	LD
X24B6C	148.9	144.0	147.4	143.0	145.8	1.32	5.5	2.8	146.0	1.47	5.0	2.6	12	EM
X97DDJ	153.7 *	154.0 *	154.8	151.5 *	153.5	2.61 *	5.4	1.4	151.8	2.46 *	4.8	1.9	12	LD
XD28BK	140.8	141.0	150.4	141.4	143.4	0.92	4.3	4.7	140.5	0.52	4.4	4.6	12	LZ
XK2AVK	132.2	133.9	131.2	134.5	132.9	-0.84	4.4	1.5	134.2	-0.54	4.5	4.3	12	TH
Y3HVXL	138.3	145.5	142.3	139.5	141.4	0.58	4.1	3.2	137.6	0.04	3.9	3.5	12	LD
Y3KL2J	133.9	134.5	130.3	135.5	133.5	-0.74	4.2	2.3	134.1	-0.57	4.2	2.4	12	LD
YQMPZH	128.4	127.3	123.3 *	128.5 L	126.9	-1.85	4.4	2.4	126.9	-1.80	4.4	2.4	4	XX
ZDVD6J	123.0	No Data	122.0 *	129.1	124.7	-2.22 *	3.8	3.8	123.6	-2.36 *	5.0	5.4	11	LZ
ZWMP9B	121.5 *H	No Data	142.5	139.6	134.5	-0.57	9.0	11.4 H	138.9	0.26	7.5	7.7	11	MB

Consensus (All Labs) Results

Wk Mean	137.37	138.77	139.17	138.07	Month Mean	137.93	Grand Mean	137.40
Avg SDr	5.45	5.09	4.96	5.55	Avg SD	5.33	Avg SD	4.94
SD btwn Labs	7.83	6.52	8.14	5.32	SD btwn Labs	5.96	SD btwn Labs	5.86
Labs Incld	57	54	57	54	SD btwn Wks	4.82	SD btwn Wks	4.44
Labs Excld	2	3	2	4	Labs Incld	56	Labs Incld	56
Labs not Rcvd	0	2	0	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
LY	L&W Crush Tester 958	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2GDYCW	22.9	23.1	23.0	22.8	23.0	0.33	1.6	0.1	22.9	0.42	1.7	0.3 L	16	LU
48GZEM	24.1	24.0	23.2	22.4	23.4	0.78	2.0	0.8	22.6	0.15	1.9	1.0	16	LA
7446MF	19.4 *L	20.9 L	22.3 L	21.4 L	21.0	-1.57	0.0	1.2	20.6	-1.84	0.9	0.9	16	LW
87BPBF	26.9 *L	26.5 XL	26.3 XL	26.8 *L	26.6	3.88 X	0.6	0.3	23.7	1.21	0.5	2.1	16	BK
8JDD3A	22.7	22.6 H	22.8 H	22.7 H	22.7	0.07	2.9	0.1 L	23.2	0.79	2.2	1.3	16	LA
8NQYBF	22.9	21.8	23.3	22.3	22.6	-0.05	2.1	0.6	21.1	-1.36	1.8	1.1	16	LA
9837ZG	21.5	22.6	23.0	22.4	22.4	-0.23	2.2	0.7	22.3	-0.14	2.0	0.4 L	16	LY
9UEX3G	22.6	24.3	21.0	22.9	22.7	0.07	1.6	1.3	22.4	-0.08	1.8	0.7	16	LA
9Y93RE	20.8	20.8	21.3	21.2	21.0	-1.56	1.9	0.3	24.0	1.50	2.4	12.6 H	16	XX
B3Z4ND	21.3 L	20.5 L	21.2 L	21.7 L	21.2	-1.41	0.4	0.5	21.2	-1.19	0.3	0.5 L	14	LA
BLQ276	20.7	22.1	21.7	21.1	21.4	-1.20	2.0	0.6	21.5	-0.98	2.1	0.7	12	XX
C882P6	22.1 L	21.4 L	21.9 L	22.7 L	22.0	-0.56	1.0	0.5	22.3	-0.16	0.9	0.4 L	16	TT
CE7GK4	23.3 L	23.4 L	22.9 L	23.1 L	23.2	0.52	0.0	0.2	23.0	0.54	1.3	0.3 L	16	LU
DKBD44	23.1	21.2	23.0	No Data	22.4	-0.21	2.1	1.1	22.3	-0.14	1.9	0.6	15	LY
DRBW7Z	22.4	22.9	22.5	22.5	22.6	-0.04	1.9	0.2	22.5	0.04	1.9	0.4 L	16	LU
E9UAVB	26.0 *	24.6	23.5	23.3	24.4	1.70	2.0	1.3	24.5	2.05 *	2.4	0.8	15	LU
EKMV27	18.4 *L	18.4 XL	20.4 *L	19.0 *L	19.1	-3.46 X	0.0	0.9	20.1	-2.34 *	1.2	3.0	16	LW
EWX42D	20.0 H	20.9	20.9	21.3	20.8	-1.79	2.0	0.5	20.9	-1.54	1.8	0.5 L	16	LY
FA4GWJ	23.4	23.9	24.6 *H	25.9 *	24.4	1.78	2.2	1.1	24.3	1.80	2.1	0.8	16	LA
FEDW68	24.7	23.4	23.4	23.5	23.8	1.10	1.5	0.6	22.8	0.40	1.6	0.7	16	LA
GC8UVW	22.8	23.0 H	22.4	23.4	22.9	0.24	2.0	0.4	22.0	-0.41	1.9	1.2	16	LA
GD2HB7	22.6	22.4 H	22.6	23.4 H	22.8	0.14	2.4	0.4	22.7	0.28	2.1	0.4 L	16	LY
GU7PTT	23.4	23.1	20.9	21.7	22.2	-0.36	2.0	1.2	22.6	0.19	2.0	0.7	15	LA
HAUJHP	25.0	22.8	24.1	23.4	23.8	1.15	1.8	0.9	23.8	1.35	2.2	0.9	12	LZ
HDWKF2	21.4 H	23.6	22.6	22.6	22.6	-0.05	2.0	0.9	22.3	-0.18	2.1	0.7	16	LW
JGU73X	23.4	23.5	23.8	23.3	23.5	0.84	1.3	0.2	23.4	0.95	1.3	0.3 L	16	LH
KD84D4	21.6	22.7 H	21.9	22.5	22.2	-0.41	2.2	0.5	22.2	-0.24	1.9	0.7	16	LA
KMPR4W	22.5 L	22.2 L	22.6	22.7	22.5	-0.11	1.1	0.2	22.5	0.08	1.0	0.2 L	16	TT
LC96UV	22.2	21.7	21.0	21.3	21.6	-1.03	1.7	0.5	21.4	-1.06	1.6	0.6	16	LY
LEXJ6Q	20.1	19.3 *	21.7	20.1	20.3	-2.25 *	1.9	1.0	20.4	-2.05 *	1.8	0.6	16	LW
M6KU2C	22.4	21.5	21.5	No Data	21.8	-0.78	1.8	0.5	21.8	-0.65	1.9	0.4 L	14	LU
MNJWXV	20.4 H	23.6 L	22.6	21.9	22.1	-0.49	2.0	1.3	22.4	-0.04	1.9	0.8	15	LZ
N6JJGT	24.8	22.8	22.9	22.6 L	23.3	0.63	1.4	1.0	23.3	0.87	1.6	0.6	16	LA
NDEGBM	24.8	22.6 L	23.7 L	24.6 L	23.9	1.27	1.0	1.0	22.9	0.43	1.0	1.2	16	LY
NGVPW2	25.3 L	28.0 XL	29.1 XL	26.9 *L	27.3	4.59 X	0.0	1.6 H	26.2	3.72 X	0.0	2.6	12	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
NJH9XY	22.5	23.8	22.3	23.1	22.9	0.28	2.2	0.7	22.0	-0.40	2.0	1.1	16	XX
PHLAYR	23.4	23.7	23.7	23.4	23.6	0.91	2.0	0.2	23.0	0.53	2.1	0.6	16	LZ
PQDLDT	21.8	21.2	21.5 L	22.0 L	21.6	-0.96	1.1	0.4	22.3	-0.17	1.3	0.8	16	LA
QD63EX	21.9	20.9	22.5	22.6	22.0	-0.62	2.0	0.7	21.5	-0.98	2.0	1.0	15	LW
TBRAEG	23.2	23.3	23.2	23.7	23.3	0.71	2.0	0.2	23.6	1.14	2.2	0.8	16	LU
TNWPYQ	24.2	24.2	23.7	23.0	23.8	1.13	1.7	0.6	23.4	0.97	1.8	1.2	16	XX
TWD44G	23.1	22.3	22.8	23.3	22.9	0.26	1.6	0.4	22.9	0.47	1.5	0.6	12	LU
TZBM7F	24.8	24.4	24.6 *H	24.7	24.6	1.92	2.3	0.2	24.0	1.53	2.2	0.6	16	XX
UP9RH4	21.1	20.0 *	21.3	21.1	20.9	-1.69	1.5	0.6	20.8	-1.68	1.5	0.6	16	LA
V2FW9W	22.3	22.2	22.9	21.3	22.2	-0.44	2.0	0.7	21.9	-0.53	2.0	0.5 L	16	LU
V3N72U	22.5	23.4 H	23.6	23.5	23.2	0.59	2.1	0.5	23.7	1.21	1.9	0.6	16	LW
VQWH8F	22.8	21.3	22.4 H	22.6	22.3	-0.34	2.0	0.7	22.4	-0.07	1.8	0.5 L	8	LY
WH2Y7C	23.9 H	22.4	23.0	22.2	22.9	0.24	2.1	0.7	23.3	0.88	2.0	0.9	16	LU
XCMNMG	23.6 L	23.6 L	25.1 *	25.8	24.5	1.84	1.6	1.1	30.0	7.45 X	1.9	10.6 H	16	LH
XD28BK	21.4	21.4	22.4	20.8	21.5	-1.09	2.1	0.7	21.3	-1.10	2.0	0.5 L	16	LW
Y3HVXL	21.8 L	22.1	21.9	22.2 L	22.0	-0.60	1.6	0.2	22.0	-0.44	1.7	0.3 L	16	BK
Z9JP6M	22.8	23.2	23.0	23.6	23.2	0.53	2.0	0.3	22.9	0.44	2.1	0.2 L	16	LW
ZDVD6J	21.5	No Data	21.9	21.7	21.7	-0.91	1.7	0.2	21.5	-0.96	1.8	0.5 L	15	LZ
ZPPUUK	23.0 L	23.1 H	23.0	22.7 H	22.9	0.31	2.3	0.2	22.9	0.47	2.2	0.8	16	LH
ZWMP9B	22.2 L	No Data	23.3	26.7 *L	24.1	1.40	1.8	2.3 H	22.5	0.06	1.2	1.4	15	LA

Consensus (All Labs) Results

Wk Mean	22.65	22.51	22.60	22.82	Month Mean	22.62	Grand Mean	22.44
Avg SDr	1.76	1.90	1.85	1.80	Avg SD	1.85	Avg SD	1.80
SD btwn Labs	1.60	1.21	1.02	1.57	SD btwn Labs	1.03	SD btwn Labs	1.01
Labs Incld	55	50	53	53	SD btwn Wks	0.77	SD btwn Wks	1.94
Labs Excld	0	3	2	0	Labs Incld	52	Labs Incld	53
Labs not Rcvd	0	2	0	2				

Analysis Notes

FEDW68 - 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	LA	L&W Autoline
LH	L&W 282	LU	L&W 52 without moisture correction(was 53)
LW	L&W 53 with moisture correction (was 53M)	LY	L&W 152 without moisture correction
LZ	L&W (model not specified)	TT	TMI Short Span Compression, 17-34 (MB K455)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 56 lb Linerboard - 56A1

TAPPI Official Test Method T826

Report #576 (K)
September 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
2GDYCW	33.6	33.3	33.8	33.9	33.7	-0.15	2.2	0.2	33.8	0.09	2.1	0.5	12	LU
48GZEM	34.2	33.4	33.6	34.2	33.9	-0.04	3.1	0.4	33.2	-0.29	2.6	1.2	12	LA
7446MF	31.6 L	32.7 L	35.1 L	32.8 L	33.1	-0.51	0.0	1.5	29.5	-2.45 *	0.0	3.1 H	12	LW
87BPBF	31.2 L	32.8 L	30.6 L	30.4 *L	31.3	-1.53	0.7	1.1	34.9	0.75	1.1	2.9 H	12	BK
8JDD3A	34.8	35.9	36.3	33.9 L	35.2	0.75	3.0	1.1	35.0	0.80	2.6	1.1	12	LA
8NQYBF	32.2	31.7	34.0	32.9	32.7	-0.71	2.7	1.0	31.8	-1.10	2.3	1.2	12	LA
9837ZG	33.9	36.4	34.4	33.9	34.6	0.41	2.9	1.2	33.9	0.12	2.9	1.1	12	LY
9UEX3G	33.8	37.1	35.4 L	33.3	34.9	0.56	2.2	1.7	34.3	0.39	2.9	1.4	12	LA
9Y93RE	31.1	31.6	32.8	31.6	31.8	-1.24	2.4	0.7	31.1	-1.50	2.4	0.8	12	XX
B3Z4ND	32.5 L	33.9 L	32.5 L	32.2 L	32.8	-0.67	0.8	0.7	31.8	-1.11	1.0	2.8 H	10	LA
BLQ276	33.9	33.0	33.9	33.3	33.5	-0.23	3.1	0.5	33.2	-0.24	2.9	1.1	12	XX
C882P6	33.3 L	32.9 L	33.7 L	33.4 L	33.3	-0.34	1.2	0.3	33.4	-0.12	1.1	0.3 L	12	TT
CE7GK4	33.8 L	34.3 L	35.2 L	34.5 L	34.5	0.30	0.0	0.6	34.5	0.48	2.3	1.3	12	LU
DKBD44	32.8	32.3	33.5	No Data	32.9	-0.61	2.5	0.6	32.8	-0.51	2.6	0.8	11	LZ
DRBW7Z	31.8	32.7	33.1	33.7	32.8	-0.64	2.5	0.8	33.0	-0.40	2.4	0.7	12	LU
E9UAVB	39.3 *	35.3 H	35.7	35.1	36.4	1.40	3.1	2.0	35.6	1.15	3.0	1.7	10	LU
EKMV27	31.1 L	31.2 L	35.2 L	33.1 L	32.7	-0.72	0.0	1.9	31.1	-1.53	0.0	1.9	12	LW
EWX42D	30.8	30.9	31.1	32.3	31.2	-1.54	2.9	0.7	31.1	-1.50	4.2	0.7	12	LY
FA4GWJ	38.7 *	37.9 *H	38.3 *H	38.2 *	38.3	2.51 *	3.6	0.3	37.4	2.19 *	3.3	1.2	12	LA
FEDW68	33.6	33.8	33.0	32.8	33.3	-0.37	2.4	0.5	33.7	0.03	2.5	0.7	12	LA
GC8UVW	34.7	35.2	33.6	34.8	34.6	0.37	3.2	0.7	32.9	-0.47	2.9	1.7	12	LA
GD2HB7	34.1	34.1	34.0	33.6	34.0	0.01	2.9	0.2	33.6	-0.01	2.5	0.9	12	LU
GU7PTT	34.6	32.9	30.1 *	31.0	32.1	-1.03	2.9	2.0	33.2	-0.24	2.9	1.6	10	LA
HAUJHP	36.5	36.9	36.1	35.9	36.4	1.40	2.8	0.4	37.1	2.06 *	3.1	1.0	12	LZ
HDWKF2	31.5	34.0	36.0	34.2 H	33.9	-0.01	3.0	1.9	33.5	-0.12	3.1	1.6	12	LW
JGU73X	34.8	35.3	34.9	35.1	35.0	0.64	2.2	0.2	35.0	0.79	2.3	0.7	12	LH
KD84D4	34.5	33.5	35.2	32.3	33.9	-0.04	2.7	1.3	33.4	-0.14	2.6	1.0	12	LW
KMPR4W	33.5 L	33.9 L	33.9 L	33.8 L	33.8	-0.08	1.0	0.2	33.8	0.08	1.1	0.3 L	12	TT
LC96UV	32.6	31.3	32.2	33.4	32.4	-0.89	2.2	0.9	32.4	-0.72	2.5	1.1	12	LY
LEXJ6Q	31.8	29.9 *	30.4	30.6	30.7	-1.87	3.1	0.8	30.9	-1.61	3.1	0.7	12	LW
M6KU2C	33.4	32.8	33.0	No Data	33.0	-0.51	2.4	0.3	33.0	-0.38	2.3	0.5	11	LU
MNJWXV	32.9	32.9	36.2	32.8	33.7	-0.15	3.1	1.7	33.6	0.00	3.0	1.2	12	LZ
N6JJGT	33.9	33.6	34.1	33.7	33.8	-0.06	3.0	0.2	34.1	0.25	2.5	0.4	12	LA
NDEGBM	35.5	36.7	38.8 *	37.6 *	37.1	1.85	2.4	1.4	35.4	1.02	2.4	2.0	12	LY
NGVPW2	39.4 *L	42.1 XL	42.6 XL	No Data	41.3	4.26 X	0.0	1.7	41.3	4.53 X	0.0	1.7	3	LA

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 56 lb Linerboard - 56A1

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
NJH9XY	35.7	36.4	34.8	33.8	35.2	0.71	2.7	1.1	33.4	-0.15	2.8	1.8	12	XX
PHLAYR	31.8	33.0	36.5	35.6	34.2	0.17	2.8	2.2 H	34.8	0.67	2.7	1.7	12	LZ
PQDLDT	32.7	32.2	32.0	32.5	32.4	-0.91	3.0	0.3	33.1	-0.34	2.7	0.7	12	LA
QD63EX	32.2	34.4	33.8 H	33.0	33.3	-0.34	3.4	1.0	32.3	-0.82	2.8	1.0	12	LW
TBRAEG	37.1	35.5	37.6	37.0	36.8	1.66	2.9	0.9	36.2	1.53	2.9	1.5	12	LU
TNWPYQ	35.9	35.9	35.3	35.0	35.5	0.93	2.7	0.4	34.0	0.18	2.5	2.6	12	XX
TWD44G	35.2 H	34.8	36.4	34.2	35.1	0.70	3.0	0.9	35.4	1.01	1.7	1.0	12	LU
TZBM7F	36.3	39.7 X	37.8 H	37.9 *	37.9	2.30 *	3.3	1.4	36.8	1.85	3.4	1.4	12	LU
UP9RH4	31.2	30.9	31.8	31.7 L	31.4	-1.46	1.7	0.4	31.7	-1.13	2.5	1.1	12	LA
V2FW9W	32.1	31.4	33.8	33.3	32.6	-0.75	2.6	1.1	32.5	-0.69	3.1	0.9	12	LU
V3N72U	33.9	33.5 L	34.9 L	33.2	33.9	-0.03	2.2	0.7	34.7	0.59	2.5	1.0	12	LW
VQWH8F	32.3	32.4	32.6	33.0	32.6	-0.79	2.5	0.3	32.8	-0.48	2.8	0.6	8	LY
WH2Y7C	36.1	34.5	36.1	34.6	35.3	0.79	2.7	0.9	35.9	1.34	3.1	0.7	12	LU
XCMNMG	37.8 H	40.1 XH	38.1	37.3 *	38.3	2.53 *	3.6	1.2	37.3	2.17 *	2.6	1.4	8	LH
XD28BK	32.0	31.3	32.7	32.5	32.1	-1.05	2.6	0.7	32.0	-0.99	2.7	0.7	12	LW
Y3HVXL	33.0	32.8	33.1	33.2	33.0	-0.52	2.4	0.2 L	32.9	-0.44	2.3	1.1	12	BK
Z9JP6M	34.0	33.8	34.1	33.6	33.9	-0.02	3.0	0.2	33.7	0.05	3.0	0.3 L	12	LW
ZDVD6J	32.9	No Data	33.2	33.4	33.2	-0.44	2.5	0.2	32.5	-0.67	2.6	0.7	11	LZ
ZPPUUK	34.8	33.1 H	35.9	34.7 H	34.6	0.41	3.3	1.2	34.6	0.57	3.1	1.5	12	LH
ZWMP9B	34.4 L	No Data	31.7 H	34.8	33.7	-0.16	3.6	1.7	41.1	4.39 X	1.7	24.6 H	11	LA

Consensus (All Labs) Results

Wk Mean	33.87	33.64	34.29	33.82	Month Mean	33.93	Grand Mean	33.65
Avg SDr	2.68	2.67	2.60	2.52	Avg SD	2.65	Avg SD	2.61
SD btwn Labs	2.06	1.82	2.00	1.69	SD btwn Labs	1.73	SD btwn Labs	1.69
Labs Incld	55	50	54	52	SD btwn Wks	1.03	SD btwn Wks	1.34
Labs Excld	0	3	1	0	Labs Incld	54	Labs Incld	53
Labs not Rcvd	0	2	0	3				

Analysis Notes

FEDW68 - 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	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
48GZEM	173.1	-0.09	22.40		189.6	0.57	24.10	4	LA
633HW7	164.7	-0.45	9.02	L	159.3	-0.74	5.76	4	EV
7446MF	196.1	0.89	22.21		190.4	0.61	4.72	4	EV
87BPBF	204.0	1.22	34.20		206.2	1.29	9.85	4	EV
8NQYBF	123.0	-2.23 *	16.61		124.8	-2.24 *	1.29 L	4	LA
B3Z4ND	220.5	1.93 *	43.60	H	214.0	1.63	9.21	2	LA
DKBD44	175.9	0.03	12.99		204.5	1.22	34.45 H	4	EV
EWX42D	180.5	0.22	14.30		178.6	0.09	3.78	4	EV
GC8UVW	184.6	0.40	22.81		181.3	0.21	8.36	4	EV
GU7PTT	161.8	-0.58	11.26		186.1	0.42	25.43	4	LA
HAUJHP	172.3	-0.13	24.51		177.2	0.03	6.01	3	XX
HDWKF2	186.3	0.47	14.03		179.9	0.15	4.31	4	XX
KD84D4	192.7	0.74	20.87		199.9	1.02	7.21	4	LA
MNJWXV	168.4	-0.29	13.96		188.1	0.50	21.57	4	LA
N6JJGT	168.7	-0.28	21.61		168.6	-0.34	4.19	4	XX
NDEGBM	133.7	-1.77	12.54		127.6	-2.12 *	14.19	4	EV
NGVPW2	215.4	1.71	23.48		185.6	0.40	26.24	3	LA
TBRAEG	145.6	-1.27	13.95		145.2	-1.36	2.90	4	EV
V2FW9W	184.4	0.39	16.59		184.1	0.33	6.76	4	EV
WH2Y7C	168.8	-0.28	12.11		181.8	0.23	11.30	4	EV
X97DDJ	150.1	-1.07	19.52		153.2	-1.01	3.67	4	EV
XD28BK	173.4	-0.08	17.09		172.9	-0.15	20.10	4	EV
ZWMP9B	187.8	0.53	37.78	H	159.2	-0.75	19.55	4	LA

Consensus (All Labs) Results

Month Mean	175.29	Grand Mean	176.43
Avg SD	21.63	Avg SD Months	15.03
SD btwn Labs	23.46	SD btwn Labs	23.04
Labs Incld	23	Labs Incld	23

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42D3

TAPPI Official Test Method T538

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
3EYYMF	370.6	0.26	7.81	389.1	0.91	19.20	4	XX
8JDD3A	364.2	-0.37	5.67	367.6	-0.37	3.69	4	XX
9UEX3G	352.7	-1.51	10.65	358.0	-0.95	5.07	4	LA
DRBW7Z	372.0	0.39	9.99	370.3	-0.21	2.74	4	XX
FEDW68	371.4	0.34	8.53	409.2	2.11 *	34.90 H	4	XX
N7XNFR	376.1	0.80	11.02	376.0	0.13	3.30	4	PP
PHLAYR	384.9	1.67	5.87	384.9	0.66	0.00	1	XX
PQDLDT	365.6	-0.24	6.50	365.6	-0.49	1.24 L	4	LA
U3U28U	354.5	-1.33	8.09	359.1	-0.88	9.20	4	LA

Consensus (All Labs) Results

Month Mean	368.00	Grand Mean	373.83
Avg SD	8.45	Avg SD Months	13.95
SD btwn Labs	10.14	SD btwn Labs	16.75
Labs Incld	9	Labs Incld	8

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
7446MF	158.0	3.46 X	9.08		159.3	4.31 X	4.57	4	SC
8JDD3A	106.6	0.31	2.74		104.9	0.13	5.90	4	SC
8NQYBF	103.8	0.14	5.76		108.1	0.37	3.95	4	TM
B3Z4ND	187.0	5.24 X	11.51		173.8	5.43 X	18.67	2	HY
DKBD44	88.5	-0.80	4.89		88.0	-1.18	4.48	4	XX
DRBW7Z	113.0	0.70	3.45		113.7	0.80	2.79	4	HY
FEDW68	63.1	-2.36 *	0.69	L	61.2	-3.24 X	6.41	4	LZ
HAUJHP	102.8	0.07	5.02		104.1	0.06	2.48	3	TM
KD84D4	128.4	1.65	7.54		130.9	2.13 *	3.71	4	HY
LEXJ6Q	117.2	0.96	6.76		115.9	0.97	2.84	4	TM
PQDLDT	114.2	0.77	1.64		102.1	-0.09	8.77	4	SC
TBRAEG	94.8	-0.42	7.12		94.5	-0.68	2.89	4	TM
TNWPYQ	76.3	-1.55	8.52		83.6	-1.52	9.05	4	SC
UP9RH4	103.6	0.12	5.64		100.4	-0.23	3.24	4	TM
V2FW9W	85.4	-0.99	9.79		85.9	-1.34	3.78	4	TM
WEWD9D	115.4	0.85	3.91		101.1	-0.17	11.04	4	TM
WH2Y7C	66.4	-2.16 *	9.10		63.1	-3.10 X	4.59	4	TM
WZH92K	96.5	-0.31	6.24		97.5	-0.45	3.29	4	TM
X97DDJ	112.4	0.66	4.93		119.2	1.22	5.27	4	HY

Consensus (All Labs) Results

Month Mean	101.59	Grand Mean	103.32
Avg SD	6.22	Avg SD Months	5.53
SD btwn Labs	16.28	SD btwn Labs	12.97
Labs Incld	16	Labs Incld	15

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	98.49	15.81	3.10	13
Modified Scott Bond Mechanics	120.72	10.86	19.13	2

Analysis Notes

FEDW68 - 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	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
4QRQT7	20.1	-2.10 *	2.68		23.3	-1.24	3.74	3
7446MF	29.2	1.16	2.17		29.4	1.41	1.71	3
8JDD3A	25.8	-0.06	3.49		23.8	-1.01	2.11	3
8NQYBF	28.6	0.95	3.78		29.9	1.62	1.70	3
9Y93RE	26.6	0.23	3.05		28.7	1.10	2.34	3
B3Z4ND	26.8	0.30	0.45	L	26.8	0.29	0.00	1
DKBD44	25.8	-0.06	1.92		23.5	-1.15	2.64	3
DRBW7Z	17.0	-3.21 X	1.87		17.4	-3.77 X	0.38	3
EWX42D	28.2	0.80	1.50		28.2	0.91	0.59	3
FEDW68	26.0	0.02	0.71		26.5	0.14	0.99	3
GC8UVW	26.7	0.27	3.89		29.0	1.22	3.18	2
HAUJHP	26.0	0.02	1.41		25.8	-0.14	0.28	2
HDWKF2	24.8	-0.41	1.92		24.5	-0.72	0.31 L	3
KD84D4	24.2	-0.63	4.44		26.4	0.12	2.31	3
LEXJ6Q	21.3	-1.67	1.41		20.8	-2.29 *	2.00	3
LLEZYL	27.6	0.59	1.95		27.3	0.52	0.64	3
N6JJGT	25.4	-0.20	1.14		25.9	-0.12	0.99	3
NJH9XY	26.6	0.23	1.52		26.5	0.14	1.21	3
PHLAYR	24.0	-0.70	2.55		24.2	-0.84	2.91	3
TBRAEG	27.4	0.52	3.51		26.3	0.06	2.32	3
TZBM7F	19.1	-2.45 *	1.47		23.8	-1.02	4.10	3
V2FW9W	30.2	1.52	2.28		27.9	0.75	2.91	3
V3N72U	28.6	0.95	3.13		27.6	0.63	1.56	3
WH2Y7C	29.4	1.23	4.04		28.0	0.81	2.09	3
XD28BK	24.6	-0.49	1.67		23.4	-1.18	1.44	3

Consensus (All Labs) Results

Month Mean	25.96	Grand Mean	26.13
Avg SD	2.58	Avg SD Months	2.17
SD btwn Labs	2.79	SD btwn Labs	2.31
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
48GZEM	18.1	0.05	1.53		18.2	0.11	0.62	4	LA
4QRQT7	18.8	0.62	1.16		20.0	1.66	0.88	4	GA
7446MF	18.9	0.70	1.66		18.3	0.16	0.73	4	HG
87BPBF	20.3	1.85	2.24		29.6	10.32 X	16.82 H	4	XX
8NQYBF	18.4	0.30	1.63		18.4	0.23	0.32	4	LP
B3Z4ND	7.7	-8.30 X	0.66	L	12.7	-4.83 X	7.17	2	LA
DKBD44	19.0	0.74	2.79		18.8	0.64	1.01	4	LP
DRBW7Z	18.5	0.34	2.51		17.9	-0.23	0.73	4	TP
FEDW68	20.5	1.94 *	1.42		20.1	1.75	0.45	4	LA
HAUJHP	17.6	-0.35	2.27		17.9	-0.17	0.67	3	TD
K9CAHM	18.8	0.62	1.32		18.2	0.07	0.72	3	XX
KD84D4	20.4	1.90	0.70	L	20.5	2.15 *	0.42	4	LP
KKMMW3	18.3	0.25	1.11		18.0	-0.09	0.72	4	LP
LC96UV	18.2	0.14	0.79	L	18.1	-0.02	0.39	4	LP
LEXJ6Q	18.2	0.13	2.38		18.1	0.02	0.38	4	HG
MK2MUP	18.7	0.51	1.95		18.7	0.48	0.58	4	XX
N6JJGT	16.9	-0.94	1.74		17.3	-0.74	0.82	4	LA
NB2UQN	17.7	-0.26	3.89	H	17.9	-0.24	1.32	4	GG
NGVPW2	17.2	-0.66	1.88		18.6	0.40	1.17	4	TL
PHKB3X	17.0	-0.80	2.75		17.6	-0.51	1.28	4	XX
PHLAYR	16.4	-1.29	1.60		16.4	-1.52	0.00	1	XX
PQDLDT	18.1	0.03	1.16		19.0	0.76	0.66	4	LA
TBRAEG	16.9	-0.91	1.20		18.7	0.48	1.64 H	4	LA
TZBM7F	15.7	-1.85	2.17		16.1	-1.78	0.65	4	LA
V3N72U	17.6	-0.35	1.17		17.7	-0.42	0.39	4	LP
WH2Y7C	16.1	-1.55	0.94		16.1	-1.82	0.50	4	LA
XD28BK	16.6	-1.15	1.07		16.6	-1.38	0.88	4	XX

Consensus (All Labs) Results

Month Mean	18.03	Grand Mean	18.12
Avg SD	1.88	Avg SD Months	0.82
SD btwn Labs	1.25	SD btwn Labs	1.12
Labs Incld	26	Labs Incld	25

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	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
29T34F	61.8	64.0	66.0	65.2	64.3	1.36	2.5	1.8	64.7	1.58	2.7	1.4	12	TM
2FGGDG	60.4	60.0	60.8	59.9	60.3	-0.27	2.3	0.4	60.2	-0.20	2.3	0.5 L	16	LC
2GDYCW	62.1	62.2	60.9	61.4	61.6	0.29	3.4	0.6	60.7	-0.02	2.9	1.2	16	LD
4WBZW9	57.5	58.5	56.9	58.7	57.9	-1.25	3.0	0.8	59.3	-0.57	2.8	1.9	13	LC
87BPBF	72.7 X	66.5	66.4	67.5 *	68.3	3.03 X	4.3	3.0 H	67.2	2.56 *	3.7	4.7	16	MB
93LXE4	64.1	64.0	64.5	63.4	64.0	1.26	1.9	0.4	61.9	0.46	1.7	1.5	16	LD
9837ZG	63.8	64.6	65.0	66.2 *	64.9	1.63	3.0	1.0	64.6	1.54	3.1	1.8	16	LD
9Y93RE	69.0 X	67.0 *	63.0	62.6	65.4	1.84	3.7	3.1 H	63.9	1.27	3.6	2.5	16	XX
C882P6	59.5	57.7	60.2	59.3	59.2	-0.73	3.0	1.1	59.5	-0.49	2.8	1.1	16	TH
CCEH4K	60.0	60.4	58.9	59.8	59.8	-0.47	2.3	0.6	60.0	-0.28	3.1	1.0	15	LD
CE4VM3	59.7	59.9	59.8	60.7	60.0	-0.37	2.2	0.5	59.5	-0.48	2.4	0.7	16	XX
CE7GK4	60.3	60.4	62.0	60.1	60.7	-0.10	2.8	0.9	60.6	-0.06	4.1	1.4	16	LC
DKBD44	59.3	57.8	No Data	60.1	59.1	-0.77	2.8	1.2	60.2	-0.20	3.4	1.1	15	LZ
DRBW7Z	62.0	63.5	60.3	57.9	60.9	-0.01	4.0	2.4	60.7	-0.02	3.6	1.6	16	LC
DXD4L3	60.1	61.3	60.6	62.7	61.2	0.09	2.8	1.1	62.4	0.67	3.3	1.7	16	TU
EWX42D	62.1	61.8	59.5	59.3	60.7	-0.11	3.4	1.5	58.2	-1.02	2.8	2.0	16	EN
FA4GWJ	63.9	59.8	60.3	60.8	61.2	0.11	4.0	1.9	59.3	-0.56	3.3	1.8	16	LD
FEDW68	54.7 X	56.0 *	56.1	55.9	55.6	-2.18 *	3.0	0.7	54.8	-2.35 *	2.8	1.1	16	LD
HC2WYQ	52.0 X	49.2 XL	48.8 X	46.7 XH	49.2	-4.83 X	4.8	2.2	48.6	-4.79 X	3.5	1.5	16	TC
JGU73X	63.6	61.4	63.0	62.6	62.6	0.70	3.3	0.9	62.0	0.50	3.0	2.6	16	LD
KKMMW3	61.9	59.9	60.4	60.3	60.6	-0.14	3.2	0.9	61.8	0.44	3.0	1.5	16	LD
KMPR4W	57.2	56.2	57.7	58.0	57.3	-1.51	4.0	0.8	58.8	-0.77	4.8	1.6	16	TG
LEVUZU	61.9	59.8 L	60.1	57.4	59.8	-0.47	2.5	1.8	66.6	2.35 *	3.2	11.6 H	16	MB
M6KU2C	64.0	65.4	64.2	No Data	64.5	1.48	3.1	0.8	64.0	1.32	2.8	1.0	14	LZ
MEPYUT	60.3	60.5	60.4	60.1	60.3	-0.26	2.8	0.2 L	60.0	-0.29	2.7	0.4 L	16	LD
MK2MUP	62.2	64.0	61.8	62.5	62.6	0.68	3.4	1.0	61.2	0.19	3.2	1.4	16	LD
MKGA4Q	65.4 *L	63.5	64.5 L	65.5	64.7	1.56	1.5	0.9	63.8	1.24	1.4	1.3	16	TD
MNJWXV	59.2	60.4	56.0	57.9	58.4	-1.06	2.7	1.9	58.5	-0.90	2.6	1.8	14	LD
MQ4YN2	59.1	58.6	56.8	57.1	57.9	-1.26	3.4	1.1	59.1	-0.63	3.2	1.2	16	EM
N6JJGT	60.5	60.8	60.9	61.2	60.8	-0.04	2.0	0.3	60.6	-0.06	2.3	0.6 L	16	LD
PHLAYR	56.5 *	57.2	59.3	57.7	57.7	-1.34	2.9	1.2	58.0	-1.09	2.9	1.7	16	LZ
TBRAEG	62.9	61.2 H	66.4	62.5	63.3	0.95	5.0	2.2	60.1	-0.27	3.9	3.2	16	LC
TNWPYQ	59.9	61.7	57.7	58.3	59.4	-0.63	3.0	1.8	57.6	-1.24	3.4	2.8	16	LC
UH8A8X	61.0	59.8	60.2	60.5	60.4	-0.23	2.6	0.5	60.4	-0.14	2.6	0.5 L	16	LD
UP9RH4	61.4	60.7	59.5	60.2	60.5	-0.20	3.4	0.8	61.0	0.12	3.3	1.1	16	LC

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
V2FW9W	59.2	62.6	60.4 L	60.9	60.8	-0.08	2.6	1.4	58.6	-0.85	2.8	1.7	16	LD
V3N72U	59.6	59.5	61.4	62.8	60.8	-0.05	3.4	1.6	60.9	0.06	3.0	1.6	16	LC
VE8JGD	60.9 H	67.0 *H	63.6 H	64.8 H	64.1	1.29	7.1	2.5	64.9	1.65	6.4	2.0	16	LC
WH2Y7C	67.7 X	63.0 H	64.2	63.7	64.7	1.53	4.4	2.1	60.5	-0.08	4.2	4.0	16	XX
XAKMMJ	61.7	62.8	62.4	62.7	62.4	0.61	2.8	0.5	58.9	-0.70	2.7	2.2	16	TJ
XK2AVK	59.5	61.0	64.3	64.0	62.2	0.51	1.9	2.3	61.3	0.24	2.4	2.0	16	MB
Z9JP6M	59.4	60.1	60.5	59.3	59.8	-0.47	2.9	0.6	58.8	-0.75	2.9	1.7	16	LC
ZDVD6J	59.6	No Data	59.0	59.9	59.5	-0.58	3.3	0.5	58.6	-0.83	3.3	1.3	15	LZ
ZPPUUK	60.4 H	63.5	64.3	63.6	63.0	0.83	4.3	1.7	61.0	0.11	3.6	1.9	16	LD
ZWMP9B	51.7 X	No Data	58.2	57.3	55.7	-2.15 *	2.9	3.5 H	57.0	-1.48	3.4	2.5	15	MB

Consensus (All Labs) Results

Wk Mean	60.86	61.33	61.13	60.98	Month Mean	60.94	Grand Mean	60.72
Avg SDr	3.10	3.51	3.26	3.25	Avg SD	3.27	Avg SD	3.21
SD btwn Labs	1.98	2.69	2.76	2.70	SD btwn Labs	2.43	SD btwn Labs	2.52
Labs Incld	39	42	43	43	SD btwn Wks	1.47	SD btwn Wks	2.56
Labs Excld	6	1	1	1	Labs Incld	43	Labs Incld	44
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	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

Report #576 (K)
September 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
2GDYCW	73.0	73.6	73.0	73.1	73.1	-0.30	1.7	0.3 L	71.6	-1.18	1.8	1.5	16	LD
93LXE4	73.9	72.4	73.6	73.3 L	73.3	-0.23	1.8	0.6	72.7	-0.59	1.7	0.6	16	LD
DRBW7Z	77.1	78.1 *	77.0 *	77.0 *	77.3	1.68	2.2	0.5	77.4	2.04 *	2.2	0.8	16	LC
FEDW68	74.7	74.2	74.1	74.5	74.4	0.28	1.6	0.3 L	74.9	0.68	2.3	1.1	16	LD
K9CAHM	74.1	72.7	73.8	74.6 L	73.8	0.01	1.7	0.8	73.6	-0.06	1.6	0.6	12	XX
KKMMW3	77.3	75.6	76.1	76.2	76.3	1.20	2.8	0.7	76.2	1.37	2.6	0.9	16	LD
LEVUZU	61.6 X	71.8	72.1	72.5	69.5	-2.04 *	2.7	5.3 H	72.3	-0.80	2.8	2.9	16	MB
M6KU2C	70.9	70.7	72.8	No Data	71.5	-1.11	2.1	1.1	71.7	-1.11	2.2	0.9	14	LZ
MK2MUP	74.5	72.9	72.4	70.1 *	72.5	-0.63	2.2	1.9	73.2	-0.31	2.2	1.6	16	XX
MKGA4Q	75.2 L	72.7 L	72.2	72.3 L	73.1	-0.33	0.9	1.4	72.9	-0.48	1.1	1.2	16	TD
N6JJGT	72.5	71.7	72.1	71.9	72.1	-0.83	2.5	0.4	71.6	-1.22	2.5	0.7	16	LD
TBRAEG	80.6 *	74.9	75.8 H	73.2 H	76.1	1.12	4.9	3.2	74.1	0.22	4.8	4.4 H	16	XX
V3N72U	77.3	74.9	74.6	73.5	75.1	0.62	3.5	1.6	75.0	0.69	3.0	1.9	16	XX
ZDVD6J	76.4	No Data	75.3	73.3	75.0	0.57	2.9	1.6	75.1	0.75	2.9	0.9	15	LZ

Consensus (All Labs) Results

Wk Mean	75.19	73.55	73.91	73.50	Month Mean	73.78	Grand Mean	73.72
Avg SDr	2.32	2.31	2.69	2.94	Avg SD	2.57	Avg SD	2.56
SD btwn Labs	2.53	1.96	1.62	1.82	SD btwn Labs	2.09	SD btwn Labs	1.78
Labs Incld	13	13	14	13	SD btwn Wks	1.92	SD btwn Wks	1.77
Labs Excld	1	0	0	0	Labs Incld	14	Labs Incld	14
Labs not Rcvd	0	1	0	1				

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - 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
29T34F	50.7 *	49.2	48.8 L	48.9 *	49.4	2.05 *	2.6	0.9	48.1	1.37	2.4	1.4	12	LD
4WBZW9	44.0	48.5	46.0	44.7	45.8	0.83	2.9	2.0	45.6	0.76	2.8	1.7	13	LC
4WRCEE	44.5	44.8	47.2	45.5	45.5	0.73	2.5	1.2	45.1	0.65	2.8	1.6	16	LZ
6KF3TA	41.7	41.0	41.3	41.6	41.4	-0.67	2.4	0.3	42.8	0.09	2.3	1.1	16	TH
CCEH4K	45.4	44.9	44.8 L	44.6	44.9	0.53	1.9	0.3	45.7	0.80	2.8	0.9	16	LZ
CE7GK4	44.6	44.6	46.7	42.9	44.7	0.45	3.2	1.5	44.3	0.46	2.8	1.4	16	LD
DRBW7Z	45.8	45.9	44.0	47.0	45.7	0.79	3.1	1.2	45.6	0.76	3.1	0.8	16	LC
DXD4L3	36.7	36.6	38.8 L	38.5 *	37.7	-1.96 *	2.1	1.2	38.4	-0.96	2.4	1.1	16	TU
FEDW68	44.3	45.5	45.8	45.4	45.2	0.64	3.7	0.7	45.5	0.75	2.9	1.1	16	LD
GCK9H6	39.0	38.9	39.4	40.9	39.5	-1.32	3.0	0.9	36.8	-1.35	2.6	2.4	16	LZ
HC2WYQ	41.0 L	40.7 L	37.9 H	39.6 H	39.8	-1.22	4.6	1.4	32.3	-2.43 *	4.0	4.5 H	16	TC
JGU73X	45.5	48.0	47.0	46.3	46.7	1.15	2.4	1.0	43.4	0.24	2.1	2.5	16	LD
KKMMW3	46.8	46.5	46.5	46.2	46.5	1.07	2.3	0.3	45.6	0.77	2.1	2.0	16	LD
LEVUZU	39.8	39.4	39.5	41.0	39.9	-1.18	2.9	0.7	41.5	-0.21	2.6	1.3	16	MB
MB8PWN	42.5 L	40.7	42.6 L	41.4 L	41.8	-0.54	1.1	0.9	42.2	-0.05	1.4	0.9	16	WK
MEPYUT	43.5 H	43.4 H	43.2 H	43.2 H	43.3	-0.02	5.7	0.1 L	41.9	-0.11	6.0	2.5	16	LD
MK2MUP	42.7	42.8	43.4	42.8	42.9	-0.16	3.5	0.3	42.6	0.05	3.2	0.6	16	LD
MNJWXV	42.6	46.2	42.9	42.7	43.6	0.08	2.2	1.7	43.5	0.26	2.4	1.5	15	LD
MQ4YN2	42.3	41.4	42.2	42.0	42.0	-0.47	2.7	0.4	43.7	0.31	2.2	1.2	16	LC
N6JJGT	43.5	43.4	43.4	43.3	43.4	0.01	2.4	0.1 L	43.6	0.29	2.5	0.7	16	LD
PHLAYR	43.6	43.9	45.2	44.3	44.2	0.29	1.9	0.7	44.8	0.57	2.7	1.3	16	EM
VE8JGD	34.0 *	34.6 *	33.3 X	33.4 X	33.8	-3.27 X	3.2	0.6	31.9	-2.54 *	2.9	1.6	16	XX
XAKMMJ	36.1	38.4	39.2	40.6	38.6	-1.64	1.7	1.8	37.7	-1.14	1.9	1.6	16	TJ
ZPPUUK	45.6	43.5	44.5	46.3	45.0	0.55	2.1	1.2	45.2	0.67	2.1	1.1	16	LD

Consensus (All Labs) Results

Wk Mean	42.75	43.03	43.49	43.45	Month Mean	43.37	Grand Mean	42.41
Avg SDr	2.57	2.69	3.20	3.16	Avg SD	2.90	Avg SD	2.83
SD btwn Labs	3.66	3.74	3.04	2.61	SD btwn Labs	2.92	SD btwn Labs	4.15
Labs Incld	24	24	23	23	SD btwn Wks	1.07	SD btwn Wks	1.74
Labs Excld	0	0	1	1	Labs Incld	23	Labs Incld	24
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

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

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM91

TAPPI Official Test Method T826

Report #576 (K)
September 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
29T34F	15.9 *	15.3	15.6 *	16.1 *	15.7	2.23 *	1.1	0.3	15.3	1.91 *	1.1	0.8	12	LA
2FGGDG	14.2	14.4	14.8	15.0	14.6	0.19	0.9	0.4	14.5	0.15	0.8	0.3	16	LB
4WRCEE	14.3	14.5	14.6	14.5	14.5	-0.12	1.0	0.1	14.2	-0.57	1.0	0.4	16	LA
87BPBF	13.9 L	13.2 *L	14.4 L	13.7 L	13.8	-1.39	0.2	0.5	14.2	-0.65	0.1	1.0 H	16	BK
93LXE4	14.3 L	14.4	14.7 L	14.6	14.5	-0.12	0.6	0.2	14.5	0.09	0.6	0.2	16	LA
9UEX3G	14.1	15.6	15.4 L	14.5 H	14.9	0.71	1.1	0.7 H	14.6	0.32	1.0	0.5	16	LA
9Y93RE	13.8 H	13.6	13.7	13.7	13.7	-1.55	1.1	0.1	13.4	-2.52 *	1.0	0.6	16	XX
C882P6	14.5	14.5	14.6	14.5	14.6	0.06	0.7	0.0 L	14.4	-0.12	0.7	0.2	16	TT
DKBD44	14.3	14.4	14.5	No Data	14.4	-0.26	0.9	0.1	14.3	-0.25	0.9	0.3	15	LB
DRBW7Z	15.2	14.6	14.5	14.5	14.7	0.29	1.0	0.3	14.5	0.04	0.9	0.3	16	LU
FEDW68	14.7	14.9	14.8	14.5	14.7	0.38	1.2	0.2	15.0	1.28	1.0	0.3	16	LA
HC2WYQ	14.3	14.0	14.3	14.0	14.2	-0.67	1.0	0.2	14.2	-0.53	1.1	0.2	16	TS
JGU73X	15.1	15.3	15.2	15.1	15.2	1.25	0.9	0.1	15.1	1.64	0.9	0.2	16	LH
KKMMW3	14.1	14.7	14.1	14.5	14.3	-0.35	0.8	0.3	14.4	-0.09	0.8	0.4	16	LZ
MNJWXV	13.9	14.4	15.0	14.5	14.4	-0.14	1.0	0.4	14.4	-0.14	0.9	0.4	15	LZ
MQ4YN2	13.8	13.1 *	14.0	13.4	13.6	-1.79	1.2	0.4	14.1	-0.80	1.0	0.5	16	LB
N6JJGT	15.0	14.1	14.2	14.4	14.4	-0.21	1.1	0.4	14.4	-0.19	0.9	0.3	16	LB
PHLAYR	14.7	14.7	15.1	14.4	14.7	0.38	1.0	0.3	14.8	0.78	1.0	0.6	16	LZ
UH8A8X	14.7	14.3	14.9	14.1	14.5	-0.05	0.9	0.3	14.5	0.07	0.8	0.3	16	LB
V2FW9W	14.4	14.3	14.2	14.0	14.2	-0.60	1.0	0.2	14.2	-0.58	1.0	0.2	16	LU
XCMNMG	15.8 *	15.7	15.1	15.6	15.5	1.91 *	1.0	0.3	18.2	8.98 X	1.0	4.9 H	16	LH
Z9JP6M	14.9	14.9	15.2	15.1	15.0	0.98	1.0	0.2	15.1	1.46	1.1	0.2	15	LW
ZWMP9B	14.0 L	No Data	14.0	13.6	13.9	-1.14	1.0	0.2	13.9	-1.29	0.7	0.4	15	LA

Consensus (All Labs) Results

Wk Mean	14.51	14.50	14.64	14.46	Month Mean	14.52	Grand Mean	14.45
Avg SDr	0.95	0.98	0.92	1.01	Avg SD	0.96	Avg SD	0.92
SD btwn Labs	0.58	0.67	0.49	0.64	SD btwn Labs	0.53	SD btwn Labs	0.42
Labs Incld	23	22	23	22	SD btwn Wks	0.31	SD btwn Wks	0.44
Labs Excld	0	0	0	0	Labs Incld	23	Labs Incld	22
Labs not Rcvd	0	1	0	1				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LB	L&W Model 152	LH	L&W 282
LU	L&W 52 without moisture correction (was 53)	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