Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #616 (A) - January 2021

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX15	Top to Bottom Box Compression Strength, Corrugated Boxes
202	EC13	Edgewise Compressive Strength, by T811, Corrugated Board
203	EC13	Edgewise Compressive Strength by T839, Corrugated Board
205	42F3	Bursting Strength (Mullen), 42 lb Linerboard
206	56G1	Bursting Strength (Mullen), 56 lb Linerboard
215	42F3	Ring Crush, 42 lb Linerboard
216	56G1	Ring Crush, 56 lb Linerboard
223	42F3	STFI, 42 lb Linerboard
224	56G1	STFI, 56 lb Linerboard
228	42F3	Roughness - Stylus Method, 42 lb Linerboard
229	42F3	Roughness - Sheffield Method, 42 lb Linerboard
231	42F	Internal Bond, 42 lb Linerboard
234	42F	COF Inclined Plane (Slide Angle), 42 lb Linerboard
237	42F	Air Resistance, 42 lb Linerboard
240	CM11	Flat Crush Strength (CMT), 26 lb Corrugating Medium
250	CM11	Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium
255	CM11	Ring Crush (RCT), 26 lb Corrugating Medium
261	CM11	STFI, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

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

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

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

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

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

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM11	January 2020-Current
35 lb Linerboard	35E2	June 2020-Current
	35E1	February 2020-April 2020
42 lb Linerboard	42F2	February 2020-Current
	42F1	January 2020-January 2020
56 lb Linerboard	56G1	January 2020-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'.
Labs Incld	-	The number of laboratory Means included in the Grand Mean.

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

Flag	Explanation

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

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

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

Flags assigned to Weekly Means:

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

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

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

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
3BE4TB	782.6	-0.93	92.82		782.6	-0.93	0.00	1	LG
3D3ETG	831.2	0.07	64.75		831.2	0.07	0.00	1	EX
4BDTDY	800.7	-0.56	6.36	L	800.7	-0.56	0.00	1	LM
6WWXW3	784.8	-0.89	64.29		784.8	-0.89	0.00	1	ER
7ZMQ89	630.2	-4.08 X	21.69		630.2	-4.08 X	0.00	1	TC
8E2B68	882.0	1.12	50.72		882.0	1.12	0.00	1	ET
C48NZ8	866.0	0.79	56.71		866.0	0.79	0.00	1	LS
EURPJ2	884.7	1.18	56.83		884.7	1.18	0.00	1	LG
F7JUQ4	894.7	1.38	31.49		894.7	1.38	0.00	1	ER
FNY4Q6	713.2	-2.37 *	104.77		713.2	-2.37 *	0.00	1	LS
GV2DXX	824.2	-0.07	45.12		824.2	-0.07	0.00	1	LG
JVCYK4	648.7	-3.70 X	82.72		648.7	-3.70 X	0.00	1	TB
KAMZUZ	803.0	-0.51	18.88		803.0	-0.51	0.00	1	ER
L3YWY3	793.8	-0.70	94.25		793.8	-0.70	0.00	1	LG
LN2KQX	802.0	-0.53	23.20		802.0	-0.53	0.00	1	LM
MUNUD2	764.8	-1.30	23.64		764.8	-1.30	0.00	1	LG
NKFHYJ	816.6	-0.23	40.22		816.6	-0.23	0.00	1	ER
P7TPMG	761.4	-1.37	84.83		761.4	-1.37	0.00	1	ES
PXYJUF	875.1	0.98	25.89		875.1	0.98	0.00	1	LL
Q6DRTW	865.8	0.79	9.54	L	865.8	0.79	0.00	1	LG
RNY4VM	789.1	-0.80	39.01		789.1	-0.80	0.00	1	LS
RPRYHV	810.2	-0.36	71.30		810.2	-0.36	0.00	1	LH
V6F9TQ	857.8	0.62	36.75		857.8	0.62	0.00	1	LL
XAG4RG	833.2	0.11	50.03		833.2	0.11	0.00	1	EM
YT66X4	874.9	0.97	21.31		874.9	0.97	0.00	1	LO
YYE7GL	833.6	0.12	81.91		833.6	0.12	0.00	1	EX
Z88X3K	918.2	1.87	24.85		918.2	1.87	0.00	1	LS
ZNVBGD	857.8	0.62	52.27		857.8	0.62	0.00	1	EX

Consensus (All Labs) Results

Month Mean	827.75	Grand Mean	827.75
Avg SD	55.78	Avg SD Months	0.00
SD btwn Labs	48.41	SD btwn Labs	48.41
Labs Incld	26	Labs Incld	26

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	835.92	36.68	8.17	8
Water based adhesive sealing	833.20	0.00	5.45	1
Clip sealing	823.58	54.95	4.17	17

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	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	LO	Lansmont 152-30k
LS	Lansmont Squeezer	TB	TMI Monitor/Compression Tester, Model 17-70
TC	TMI Monitor/Compression Tester, Model 17-37		

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
3URPFJ	44.6	0.16	1.69		46.1	0.87	2.07	4	XX
4GLUWG	48.3	1.48	1.67		46.8	1.05	4.02	4	XX
6WWXW3	45.6	0.52	5.10	H	44.6	0.47	1.32	4	EN
78PZCF	32.9	-3.99 X	0.90	L	36.8	-1.59	3.48	4	WK
C48NZ8	44.7	0.18	1.78		43.9	0.29	1.79	4	LC
FNY4Q6	42.6	-0.57	2.34		34.7	-2.15 *	7.21 H	4	EM
GZAU8L	44.1	-0.02	1.18		42.2	-0.17	3.74	4	LD
L3YWY3	42.7	-0.52	1.30		42.8	-0.01	1.75	4	LE
MVHF8T	37.9	-2.23 *	0.88	L	39.8	-0.80	1.45	4	TF
Q6DRTW	46.0	0.64	2.04		46.0	0.83	0.00	1	EM
RNY4VM	42.0	-0.78	4.51	H	42.2	-0.16	2.98	4	LD
YF3G4N	48.0	1.36	0.97	L	47.1	1.12	0.77	4	LC
ZNVBGD	43.6	-0.22	2.00		43.8	0.26	1.19	4	LC

Consensus (All Labs) Results

Month Mean	44.16	Grand Mean	42.84
Avg SD	2.48	Avg SD Months	3.16
SD btwn Labs	2.81	SD btwn Labs	3.78
Labs Incld	12	Labs Incld	13

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LE	L&W Crush Tester 840	TF	TMI Digital Crush Tester, Model 17-19
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
3D3ETG	43.2	-0.77	2.26		44.1	-0.62	1.38	3	CT
4BDTDY	49.0	1.21	1.32		48.4	1.37	0.89	4	EM
4BY72C	48.8	1.12	1.79		46.7	0.60	1.95	4	TD
4GLUWG	48.5	1.03	1.58		46.7	0.58	4.25	4	XX
68QBVD	50.3	1.65	2.98		46.0	0.27	3.69	4	TD
6WWXW3	45.4	-0.03	1.58		45.1	-0.16	2.06	4	EN
78PZCF	41.6	-1.35	0.47	L	43.0	-1.10	1.46	4	WK
8CVT7C	44.9	-0.21	1.16		47.3	0.84	1.66	4	TG
8E2B68	45.8	0.12	1.37		45.2	-0.12	1.14	4	TD
8VB38C	39.9	-1.92	1.22		41.5	-1.81	2.21	2	EM
9ZY32X	44.0	-0.53	3.42	H	43.7	-0.80	0.36 L	4	LC
C2FPM9	47.7	0.75	1.20		47.7	1.03	0.16 L	3	BU
C48NZ8	48.9	1.16	1.63		47.6	1.01	0.84	4	LC
D2V977	50.8	1.82	1.43		48.9	1.59	1.53	4	LD
EURPJ2	44.3	-0.41	2.07		46.6	0.53	1.73	4	TJ
F7JUQ4	40.5	-1.73	1.58		42.6	-1.27	2.75	4	LD
FNY4Q6	43.4	-0.72	1.99		42.2	-1.47	2.53	4	EM
GZAU8L	45.9	0.15	1.38		44.9	-0.25	2.59	4	LD
JVCYK4	45.7	0.09	0.98		46.9	0.66	3.16	4	LD
KAMZUZ	43.9	-0.55	1.74		44.3	-0.49	0.53	4	EM
L3YWY3	45.6	0.03	2.33		46.2	0.37	0.89	4	LY
LN2KQX	46.5	0.36	1.54		41.7	-1.72	3.30	4	TG
MVHF8T	44.3	-0.41	0.67	L	44.9	-0.24	0.82	4	TD
NKFHYJ	43.6	-0.64	2.33		46.2	0.34	2.29	4	LD
NNB96V	38.1	-2.53 *	1.94		42.2	-1.50	2.77	4	XX
P7TPMG	46.2	0.26	1.34		47.6	0.97	1.19	4	LD
PXYJUF	47.8	0.79	3.27	H	47.1	0.77	3.14	4	LC
RNY4VM	44.4	-0.38	1.43		44.3	-0.53	2.01	4	LD
RPRYHV	48.6	1.06	3.72	H	47.5	0.97	2.51	3	EM
WMQKYL	42.6	-1.00	1.67		43.1	-1.05	0.48	4	TK
XAG4RG	46.8	0.46	1.79		46.0	0.28	1.86	4	TH
XFMZBG	47.3	0.62	1.26		47.1	0.76	0.31 L	4	EM
YF3G4N	48.0	0.86	1.72		47.2	0.83	0.74	4	LC
YT66X4	44.8	-0.25	1.60		43.8	-0.73	0.85	4	LD
YYE7GL	41.6	-1.35	2.05		43.6	-0.84	3.88	4	LD
Z88X3K	49.0	1.21	1.94		50.5	2.31 *	1.09	4	TB
ZNC6HM	46.2	0.26	1.90		46.6	0.52	1.16	3	TL
ZNVBGD	44.9	-0.22	1.55		44.3	-0.53	1.04	4	LC
ZQJMFH	36.3	-3.15 X	1.76		42.5	-1.36	6.22 H	3	XX

Consensus (All Labs) Results

Month Mean	45.49	Grand Mean	45.42
Avg SD	1.89	Avg SD Months	2.26
SD btwn Labs	2.92	SD btwn Labs	2.19
Labs Incld	38	Labs Incld	39

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LY	L&W 830	TB	TMI Monitor/Compression Tester, Model 17-70
TD	TMI Digital Crush Tester, Model 17-09	TG	TMI Digital Crush Tester, 17-76
TH	TMI Monitor/Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TK	TLS Compression Tester, Model 5184	TL	Tech-Lab Systems Compression
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
3D3ETG	109.0	111.0	114.0	110.0	111.0	-0.02	8.2	2.2	108.8	-0.74	9.4	4.2	12	XX
3EG244	112.3	108.1 H	113.6	112.9	111.7	0.20	11.0	2.5	113.1	0.62	10.1	2.7	11	TB
3QT93P	107.9	113.6	115.9	117.2 H	113.7	0.79	11.0	4.1	114.7	1.14	9.8	6.4	12	TB
4GLUWG	115.5 L	116.6 L	115.6 L	116.5 L	116.0	1.52	1.7	0.6	115.9	1.49	2.5	1.2	12	LC
4TT2DY	115.8	108.0	108.4	109.6	110.5	-0.19	7.8	3.6	110.1	-0.32	8.8	3.8	12	LZ
4X7KVG	104.7	112.0	113.5	111.5	110.4	-0.20	8.6	3.9	109.3	-0.60	10.7	3.0	12	LJ
6LQC8E	110.8	110.4	110.3	110.8	110.6	-0.15	4.4	0.3 L	110.6	-0.19	4.5	0.2 L	12	LJ
7J3Z9A	102.3 *	100.3 *	113.0	105.1	105.2	-1.81	8.2	5.6 H	105.4	-1.82	8.7	4.7	12	LA
7NCDQ9	113.6	112.7	113.3	113.9	113.4	0.71	5.3	0.5	113.0	0.60	5.1	0.5 L	12	LA
86F8X8_AL	111.8	118.4	123.1 X	117.4	117.7	2.02 *	10.0	4.6	119.1	2.53	*10.2	5.3	12	AK
8TMQ97	113.6	108.5 L	109.8	111.2	110.8	-0.09	7.0	2.2	106.3	-1.56	8.1	4.1	12	AC
9PJFPC	112.3	117.8	113.1	112.9	114.0	0.91	10.5	2.6	114.9	1.21	10.5	2.5	8	LA
9X9ZVA_AL	115.0	113.5	113.4	114.9	114.2	0.96	8.1	0.9	116.3	1.64	9.7	3.5	12	AL
9ZY32X_AL	111.8 H	105.0	113.4	102.0 *	108.0	-0.94	12.4	5.4	112.1	0.30	11.0	4.5	11	AL
A8UN4H_AL	108.0	108.0	112.5	108.5	109.3	-0.56	8.7	2.2	111.4	0.08	8.5	3.2	12	AL
B89D49	109.2	111.6	110.8	110.2	110.4	-0.19	5.0	1.0	109.6	-0.49	4.5	2.1	12	LA
C48NZ8	111.5	109.1	104.6	113.3	109.6	-0.44	8.6	3.8	110.0	-0.35	8.4	2.7	12	AH
C6HQNQ	114.8	116.8	115.1	112.1	114.7	1.11	9.1	1.9	115.7	1.44	9.6	1.9	12	LA
D2V977_AL	114.7	116.9	116.4	121.4 *	117.4	1.92	6.7	2.9	119.0	2.48	* 7.2	2.7	12	AK
DCVYPT	114.8 L	110.4	115.6	No Data	113.6	0.77	5.5	2.8	111.1	-0.03	5.6	3.5	7	AX
DCVYPT_AL	108.0	105.2	108.1	No Data	107.1	-1.22	7.5	1.6	108.2	-0.93	7.1	2.1	7	AL
DL72BT	101.8 *	97.6 X	101.5 *	101.0 *	100.5	-3.24 X	8.0	1.9	86.3	-7.92	X 7.3	21.1 H	12	LA
E6TAJ9	108.6	107.7	110.0	111.3	109.4	-0.51	7.2	1.6	109.5	-0.52	7.7	1.3	12	TP
EWF2H7	109.6	110.2	108.9 L	109.1	109.5	-0.50	4.2	0.6	109.3	-0.59	4.0	0.7 L	12	LA
EXQ366	111.5	106.4	104.4	107.6	107.5	-1.10	8.4	3.0	110.3	-0.27	9.9	4.9	8	LA
F7JUQ4	109.6	104.9	106.7	111.7	108.2	-0.87	9.4	3.0	108.2	-0.94	8.4	3.7	12	LZ
FTTXQR	103.6	106.5	107.8	110.1	107.0	-1.25	8.8	2.7	106.8	-1.39	8.8	2.2	12	LC
GZAU8L	110.8	111.6	110.3	106.6	109.8	-0.38	5.6	2.2	107.4	-1.20	6.2	3.7	12	LA
HXXG3P	112.9	107.8	108.8	108.2	109.4	-0.51	7.7	2.4	109.5	-0.53	7.5	1.8	8	LA
JCD2YN_AL	113.1	109.8	108.8	111.1	110.7	-0.12	6.5	1.9	117.0	1.84	6.9	5.9	12	AL
JK942Y_AL	106.3	108.3	108.3	107.0	107.5	-1.10	9.0	1.0	107.9	-1.04	8.3	2.8	12	AL
JLN4KN_AL	112.5	113.0	113.3	114.1	113.2	0.66	9.7	0.7	113.2	0.66	9.7	0.7 L	4	AK
KHG6M2	122.1 X	118.0	116.4	122.4 *H	119.7	2.65 *	11.0	3.0	121.2	3.19	X 9.3	2.8	12	AX
L3YWY3	108.6	111.0	113.9	113.7	111.8	0.22	6.4	2.5	114.7	1.14	6.6	2.6	12	AH
L6QVDZ	115.7	113.0	108.3 H	112.6	112.4	0.40	13.1	3.1	111.8	0.22	10.9	2.8	12	LC

	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
L6QVDZ_AL	114.3	107.9	108.0 H	109.1	109.8	-0.38	12.7	3.0	113.5	0.75	11.6	3.4	12	AL
MVHF8T	111.8	110.2	110.7	110.8	110.9	-0.06	10.8	0.7	110.6	-0.19	10.2	2.3	12	XX
NKFHYJ	108.0	107.2 H	102.7 *	101.3 *	104.8	-1.92	9.3	3.3	112.5	0.43	9.3	7.9 H	12	AH
P7TPMG	112.3	114.6	113.1	108.5	112.1	0.32	8.1	2.6	110.4	-0.25	7.8	2.5	12	LA
PPKZAG_AL	110.8	107.5	107.2	108.8	108.6	-0.76	9.8	1.6	108.6	-0.82	9.8	1.6	4	AL
PQZW3G_AL	114.5	116.2	115.0	114.3	115.0	1.20	9.2	0.9	111.4	0.08	9.0	3.5	12	AL
PYQH9E	113.8	115.7	111.9	115.2	114.1	0.94	6.1	1.7	112.9	0.56	5.6	1.6	12	LA
PYQH9E_AL	109.9	112.6	112.2 L	110.9 L	111.4	0.10	4.9	1.2	112.0	0.27	5.5	2.0	12	AL
QVKGJ2	106.3	116.2	112.3 H	106.8	110.4	-0.21	11.7	4.7	112.5	0.44	9.6	3.5	12	LB
R97BAL	100.8 *	106.1	109.6	106.9	105.8	-1.61	7.1	3.7	107.0	-1.33	8.7	2.9	12	LA
RJ8WCD_AL	106.7	115.1	113.6	107.0	110.6	-0.15	6.9	4.4	111.0	-0.06	7.7	3.0	12	AL
RNY4VM	111.3	108.5	108.9	108.9	109.4	-0.51	8.2	1.3	107.4	-1.18	8.8	2.8	12	LA
RVHART	109.9	110.9	110.4	108.7	110.0	-0.34	6.6	0.9	109.8	-0.44	6.9	0.9	12	AH
T92BMQ_AL	No Data	111.0	111.4	No Data	111.2	0.04	10.3	0.2	108.2	-0.95	8.7	3.5	10	AL
TKHXYC	111.4	105.2	103.8 *	110.4	107.7	-1.03	7.8	3.8	107.3	-1.24	9.2	3.1	12	AH
TKHXYC_AL	106.4	110.2	111.7	113.3	110.4	-0.21	9.5	3.0	110.9	-0.08	8.8	3.6	12	XX
TLAWDB_AL	116.2	120.1 *	122.0 X	120.9 *	119.8	2.67 *	8.9	2.5	114.8	1.16	7.4	4.2	12	AL
VXGL4B	113.4	112.8	117.2	No Data	114.5	1.04	5.8	2.4	113.8	0.84	6.3	1.9	11	AH
YL9AXJ	108.9 L	107.9	108.3 L	108.0	108.3	-0.86	4.1	0.4 L	108.6	-0.81	3.7	0.6 L	12	XX
YQ44VK	115.0	112.9	110.6	111.0	112.4	0.40	8.8	2.0	112.4	0.40	9.2	1.7	12	LC
YVEVN8_AL	116.2	109.7	107.8	107.4	110.3	-0.25	6.2	4.1	110.3	-0.26	7.0	3.0	12	AL
YYE7GL	110.8	103.6	110.0	104.8	107.3	-1.16	8.0	3.6	107.3	-1.24	8.8	2.7	12	AH
YYXAPL	112.3	110.0	No Data	No Data	111.2	0.02	10.9	1.6	111.3	0.05	9.9	1.4	6	LC

Consensus (All Labs) Results

Wk Mean	110.77	110.78	110.80	110.77	Month Mean	111.07	Grand Mean	111.15
Avg SDr	8.53	8.24	8.63	8.40	Avg SD	8.46	Avg SD	8.36
SD btwn Labs	3.74	4.16	3.58	4.49	SD btwn Labs	3.26	SD btwn Labs	3.14
Labs Incld	56	57	55	53	SD btwn Wks	2.73	SD btwn Wks	3.24
Labs Excld	1	1	2	0	Labs Incld	57	Labs Incld	56
Labs not Rcvd	1	0	1	5				

Key to Instrument Codes Reported by Participants

AC	Perkins Model C	AH	Perkins Model AH
AK	L & W Autoline 300	AL	L & W Autoline 400
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LB	L&W Burst-O-Matic	LC	L&W Autoline (205 Enrollment)
LJ	L&W Bursting Strength Tester J-Type	LZ	L&W (model not specified)
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
3D3ETG	116.0	118.5	114.5	116.0	116.3	0.30	10.3	1.7	114.7	-0.20	10.7	4.5	12	XX
3EG244	109.7	116.2	118.0	117.1	115.2	0.02	10.8	3.8	117.0	0.52	10.8	3.4	11	TB
3QT93P	115.4	112.2	118.2	125.0 *	117.7	0.69	9.9	5.4	118.4	0.94	9.1	6.1	12	TB
4TT2DY	115.7	117.4	114.3	117.5	116.2	0.29	11.8	1.5	114.6	-0.22	11.4	2.5	12	LZ
4X7KVG	111.9	109.6	108.9 H	108.6 H	109.7	-1.47	14.7	1.5	111.3	-1.26	11.9	2.6	12	LZ
6LQC8E	113.9	113.4	112.5	115.2	113.7	-0.38	5.5	1.1	113.5	-0.57	6.0	0.6 L	12	LJ
7J3Z9A	110.6	108.9	115.1	108.9	110.9	-1.16	9.5	2.9	109.6	-1.78	11.0	3.9	12	LA
7NCDQ9	116.5	115.3	115.8	116.7	116.1	0.25	6.1	0.6	115.8	0.14	5.6	0.5 L	8	LA
86F8X8_AL	122.7	118.7	116.3	109.5	116.8	0.45	11.3	5.5	116.7	0.42	10.9	4.0	12	AK
8TMQ97	114.7	109.1	107.0 L	111.4	110.6	-1.25	6.7	3.3	108.3	-2.17 *	7.7	3.5	12	AC
9PJFPC	113.2	117.5	119.9	120.2	117.7	0.69	9.3	3.2	115.6	0.07	9.5	3.5	8	LA
9X9ZVA_AL	124.8 *	112.8	126.4 *	117.6	120.4	1.42	9.2	6.3	119.2	1.19	9.8	5.5	12	AL
9ZY32X_AL	119.8	115.9 H	116.1	105.6 *H	114.3	-0.22	14.6	6.1	115.4	0.00	14.3	6.6	12	AL
A8UN4H_AL	115.4	117.0	119.0	117.8	117.3	0.58	9.5	1.5	117.4	0.63	9.3	3.7	12	AL
B89D49	116.1	115.7	115.6	113.2 L	115.2	0.00	5.0	1.3	114.5	-0.25	6.0	1.0	12	LA
C48NZ8	114.0	109.2	112.6	115.9	112.9	-0.60	9.9	2.8	110.8	-1.40	9.0	3.4	12	AH
C6HQNQ	110.3 H	123.5	117.1	118.0	117.2	0.56	14.2	5.4	118.9	1.11	11.6	4.9	12	LA
D2V977_AL	124.5 *	123.6	123.1	116.5	121.9	1.84	8.0	3.7	123.2	2.44 *	8.0	3.6	12	AL
DCVYPT	123.0	119.0	121.6 L	No Data	121.2	1.64	6.1	2.0	116.9	0.49	6.1	3.8	11	LC
DCVYPT_AL	109.1	115.5	No Data	No Data	112.3	-0.77	7.1	4.5	114.5	-0.26	8.4	2.5	10	AL
DL72BT	102.5 X	108.6	110.4	109.3	107.7	-2.02 *	9.3	3.6	109.5	-1.80	9.4	4.2	12	LA
E6TAJ9	112.0	112.7	113.5	115.2	113.4	-0.49	8.4	1.4	113.3	-0.64	8.5	1.3	12	TP
EWF2H7	122.4 L	121.9 L	124.0 L	123.9 *L	123.1	2.14 *	3.2	1.1	123.9	2.66 *	3.1	1.8	12	LA
EXQ366	122.2	117.0	116.6	115.5	117.8	0.73	8.6	3.0	118.7	1.03	10.2	3.1	8	LA
F7JUQ4	115.4	109.5	110.4	112.8	112.0	-0.85	7.5	2.6	111.1	-1.32	10.4	2.1	12	LZ
FTTXQR	115.9	111.2	113.6	109.7	112.6	-0.69	11.3	2.7	112.7	-0.81	11.2	3.4	12	LA
GZAU8L	113.8	111.2	116.6	116.9	114.6	-0.14	8.5	2.7	114.6	-0.23	8.0	2.3	12	LA
HXXG3P	112.0	112.3	115.9	115.0	113.8	-0.37	8.3	1.9	113.5	-0.56	9.3	2.7	12	LA
JCD2YN_AL	112.1	117.6	114.5	112.5	114.2	-0.27	9.6	2.5	115.2	-0.03	8.9	2.9	12	AL
JK942Y_AL	115.7	114.4	110.8	114.2	113.8	-0.37	11.4	2.1	114.0	-0.41	11.7	2.8	11	AL
JLN4KN_AL	113.1	119.2	113.2	116.4	115.5	0.09	9.7	2.9	115.5	0.04	9.7	2.9	4	AK
KHG6M2	119.4	117.1	121.4	124.0 *	120.5	1.44	11.2	2.9	122.7	2.26 *	10.6	4.7	12	AX
L3YWY3	116.9	120.9	116.3	116.1	117.6	0.65	8.2	2.3	118.9	1.10	7.3	1.9	12	AH
L6QVDZ	114.2	113.0	114.0	111.0	113.0	-0.58	8.0	1.5	115.2	-0.06	10.1	4.2	12	LC
L6QVDZ_AL	116.3	118.5	105.0 *H	106.0 *H	111.5	-1.00	21.2	7.0 H	114.8	-0.16	16.7	6.0	12	AL

Containerboard Interlaboratory Testing Program

Analysis 206

Bursting Strength (Mullen), 56 lb Linerboard - 56G1

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
MVHF8T	118.8	118.4 H	118.2	118.3	118.4	0.89	13.6	0.3 L	117.0	0.50	12.7	1.6	12	XX
NKFHYJ	110.7 H	107.9	103.5 *	100.7 X	105.7	-2.56 *	13.2	4.5	114.6	-0.22	12.0	7.6 H	12	AH
P7TPMG	111.6	118.0	120.7	108.9	114.8	-0.10	10.1	5.5	113.7	-0.51	11.2	3.4	12	LA
PPKZAG_AL	113.8	113.2	111.6	112.4	112.8	-0.65	7.3	1.0	112.8	-0.80	7.3	1.0	4	AL
PQZW3G_AL	116.2	115.7	118.5	121.6	118.0	0.77	10.5	2.7	117.2	0.57	9.1	1.7	12	XX
PYQH9E	118.8	121.2	113.0	119.3	118.1	0.79	8.5	3.5	116.6	0.40	6.6	2.6	12	LA
PYQH9E_AL	112.4	115.6	118.4	116.8	115.8	0.18	7.0	2.5	116.3	0.30	7.5	2.2	12	XX
QVKGJ2	114.3 H	112.9	110.4	110.2	112.0	-0.87	12.2	2.0	115.4	0.00	9.5	4.1	12	LB
R97BAL	108.0	111.7	113.4	112.1	111.3	-1.05	10.8	2.3	113.6	-0.54	11.3	4.0	12	XX
RJ8WCD_AL	117.4	111.2	114.7	111.2	113.6	-0.42	9.0	3.0	113.8	-0.48	8.1	2.1	12	AL
RNY4VM	114.1	116.4	108.8	120.1	114.8	-0.09	10.1	4.7	112.4	-0.92	11.3	4.1	12	LA
RVHART	114.3	114.1	113.2	112.8	113.6	-0.42	7.3	0.7	113.7	-0.52	7.5	1.6	12	AH
T92BMQ_AL	No Data	120.3	114.3	No Data	117.3	0.58	11.4	4.2	119.3	1.21	10.5	4.4	10	AL
TKHXYC	114.2	106.0 *	112.2	107.8	110.1	-1.38	10.0	3.8	111.8	-1.09	10.7	3.8	12	AH
TKHXYC_AL	111.6	112.2	108.0	113.2	111.3	-1.06	11.3	2.3	112.2	-0.98	10.8	2.9	12	XX
TLAWDB_AL	117.9	125.0 *	126.1 *	122.5	122.9	2.10 *	10.6	3.6	118.3	0.90	8.1	4.2	12	AL
VXGL4B	120.8	123.6	124.8 *	No Data	123.1	2.15 *	9.0	2.1	119.8	1.39	6.6	3.0	11	AH
YL9AXJ	109.4 L	117.5	118.1	116.6	115.4	0.07	7.4	4.0	118.7	1.02	5.7	4.4	8	XX
YQ44VK	112.0	116.2	115.3	113.8	114.3	-0.22	11.0	1.8	115.4	0.01	9.8	2.0	12	LC
YVEVN8_AL	111.2	117.0	115.2	115.3	114.7	-0.13	9.0	2.4	114.2	-0.36	9.9	2.4	12	AL
YYE7GL	109.2	114.0	116.0	112.8	113.0	-0.58	10.5	2.9	111.6	-1.15	10.0	3.0	12	AH
YYXAPL	119.9	116.8	No Data	No Data	118.4	0.87	12.0	2.2	116.4	0.32	11.0	3.8	6	XX

Consensus (All Labs) Results

Wk Mean	115.19	115.42	115.32	114.80	Month Mean	115.15	Grand Mean	115.34
Avg SDr	9.74	9.48	10.22	11.19	Avg SD	10.14	Avg SD	9.74
SD btwn Labs	4.11	4.32	4.87	4.55	SD btwn Labs	3.69	SD btwn Labs	3.23
Labs Incld	55	57	55	51	SD btwn Wks	3.29	SD btwn Wks	3.56
Labs Excld	1	0	0	1	Labs Incld	57	Labs Incld	57
Labs not Rcvd	1	0	2	5				

Key to Instrument Codes Reported by Participants

AC	Perkins Model C	AH	Perkins Model AH
AK	L & W Autoline 300	AL	L & W Autoline 400
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LB	L&W Burst-O-Matic	LC	L&W Autoline (206 Enrollment)
LJ	L&W Bursting Strength Tester J-Type	LZ	L&W (model not specified)
TB	TMI Monitor/Burst 1000	TP	Technidyne PROFILE/Plus
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42F3

TAPPI Official Test Method T822

Report #616 (A)
January 2021

	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
2EKAVC	96.0	95.2	95.9	95.3	95.6	1.24	2.5	0.4 L	91.1	-0.22	3.0	4.8	12	LZ
2FC6HK	87.1	87.0	90.3	86.9	87.8	-1.47	2.8	1.7	89.4	-0.90	3.0	2.3	8	EN
3EG244	93.5	92.9	91.2	91.3	92.2	0.06	3.6	1.2	92.1	0.20	3.3	2.3	12	LD
3QT93P	94.9	93.2	97.3	95.8	95.3	1.14	2.8	1.7	94.9	1.35	3.7	1.8	12	LX
4TT2DY	90.7	88.7	89.5	87.6	89.1	-1.02	2.5	1.3	88.9	-1.13	3.0	2.0	12	LC
6LQC8E	92.2	93.2	92.3	93.0	92.7	0.21	2.3	0.5	91.8	0.08	2.5	0.7 L	12	LD
6WWXW3	90.1	90.8	91.7	89.1	90.4	-0.58	2.6	1.1	88.0	-1.48	2.9	2.9	12	EN
7DCM8L	95.0	92.8	95.2	92.0	93.8	0.59	3.6	1.6	94.3	1.09	2.9	1.6	12	LC
7NCDQ9	93.4	93.7	93.2	92.8	93.3	0.42	2.2	0.4 L	92.9	0.52	2.2	0.5 L	12	LD
7QZPPD	95.4	87.8	88.6	88.0	89.9	-0.74	2.7	3.7	88.0	-1.48	2.7	3.1	12	LD
8A8G87	90.2	90.0	90.8	89.3	90.1	-0.69	3.1	0.7	90.7	-0.40	2.1	0.8	12	RS
8CVT7C	94.0	92.8	92.5	93.0	93.1	0.35	3.5	0.6	94.8	1.29	2.8	1.7	12	TH
9MRGBD	83.7 *H	No Data	98.0	No Data	90.8	-0.43	6.0	10.1	92.3	0.26	4.6	6.7 H	10	MB
9PJFPC	103.6 X	106.1 X	100.4 *	102.2 X	103.1	3.84 X	2.8	2.4	102.6	4.50 X	3.5	1.8	8	LD
9ZY32X	86.8	87.5	85.3 *	88.0	86.9	-1.80	3.6	1.2	90.2	-0.61	3.4	3.2	12	LC
A8UN4H	100.7 *	99.2 *H	96.5 H	97.4 H	98.5	2.23 *	5.4	1.9	101.4	3.99 X	4.9	2.4	12	LC
B89D49	91.6	91.6	91.7	90.1	91.2	-0.28	1.7	0.8	92.7	0.42	1.9	2.1	12	LZ
C48NZ8	92.6	91.7	95.1	94.7	93.5	0.51	2.3	1.6	93.2	0.66	2.5	1.0	12	LC
C6HQNQ	93.3	95.3	96.6	94.5	94.9	1.00	3.0	1.4	95.4	1.53	3.9	1.5	12	LZ
CABVFA	72.3 X	72.5 X	72.4 X	73.3 X	72.6	-6.77 X	3.4	0.5 L	73.5	-7.44 X	3.3	1.5	12	EM
D2V977	92.8	94.5	95.8	94.8	94.5	0.85	2.1	1.2	93.2	0.63	2.5	1.7	12	LD
E6TAJ9	92.5	90.3	93.4	91.4	91.9	-0.06	3.2	1.3	91.4	-0.08	3.8	1.3	12	TJ
EWF2H7	90.4	91.2	88.6	91.4	90.4	-0.59	2.8	1.3	90.4	-0.50	2.8	1.1	12	TU
EXQ366	95.5	93.9	92.9	95.5	94.5	0.84	3.6	1.3	96.7	2.10 *	3.6	2.8	8	LD
F7JUQ4	95.2	95.2	95.6	94.9	95.2	1.10	2.7	0.3 L	93.0	0.55	3.1	3.3	12	LD
FTTXQR	91.6	89.5	92.8	91.0	91.2	-0.30	2.6	1.4	90.7	-0.37	2.5	1.3	12	LD
GZAU8L	89.5	89.4	88.0	90.4	89.3	-0.96	2.3	1.0	88.8	-1.18	2.4	1.1	12	LD
J8H82M	99.3 *	97.4	100.8 *	100.3 *	99.4	2.57 *	4.0	1.5	98.9	3.00 X	3.1	1.3	12	EX
JCD2YN	97.5	98.0	93.3	70.0 XH	89.7	-0.82	5.0	13.3 H	90.3	-0.56	4.7	7.0 H	12	LC
JK942Y	94.2	94.0	93.9	91.6	93.4	0.47	2.4	1.2	92.6	0.42	2.6	1.2	12	LD
JLN4KN	88.4	90.1	90.2	87.8	89.1	-1.02	2.9	1.2	88.4	-1.32	2.6	1.6	12	LD
JPZBJ8	97.2	90.6 H	89.8	90.6 H	92.1	0.00	5.5	3.5	88.2	-1.42	6.6	5.4 H	12	TU
KHG6M2	93.0	94.4	93.5	89.3	92.5	0.16	3.8	2.2	91.3	-0.15	4.0	1.9	12	LD
KLFGJ2	98.5	97.0	98.2	98.9 *	98.1	2.12 *	2.9	0.8	94.7	1.28	2.6	3.0	12	LZ
L3YWY3	93.0	93.1	92.6	92.2	92.7	0.23	2.6	0.4 L	92.2	0.22	2.8	1.6	12	LG

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42F3

TAPPI Official Test Method T822

WebCode	Weekly Means Week 1	Week 2	Week 3	Week 4	Monthly Results Mean	CPV	SD	SD Wks	Cumulative Results Mean	CPV	SD	SD Wks	Wks	Inst
L6QVDZ	92.2	91.8	92.2	90.7	91.7	-0.12	2.7	0.7	90.5	-0.47	2.8	1.1	12	LD
NKFHYJ	90.6	90.8	91.6	91.7	91.2	-0.31	2.4	0.6	88.8	-1.18	2.8	2.0	12	LD
PQZW3G	90.3	91.5	88.8	90.4	90.3	-0.63	2.1	1.1	91.5	-0.05	2.5	1.3	12	LD
PYQH9E	87.8	88.4	91.9	91.3	89.8	-0.77	2.4	2.0	89.0	-1.09	2.6	1.6	12	LD
QVKGJ2	91.4	88.0	89.1	93.5	90.5	-0.54	2.2	2.5	92.7	0.44	2.4	2.5	12	LC
R97BAL	88.8	88.0	90.8	90.7	89.6	-0.87	3.1	1.4	89.5	-0.87	3.4	2.1	12	LD
RF6X2L	91.9	91.7	89.7	89.7	90.8	-0.45	2.8	1.2	91.5	-0.04	3.1	1.1	12	LD
RNY4VM	93.1	91.3	91.2	92.9	92.1	0.02	2.4	1.0	91.5	-0.06	2.4	1.5	12	LD
WJQ968	90.8	90.0	95.4	92.6	92.2	0.05	2.8	2.4	89.6	-0.85	2.7	2.4	12	LD
XFMZBG	85.8	86.2 L	86.2	86.1	86.0	-2.10 *	2.5	0.2 L	90.6	-0.44	2.6	3.4	12	EM
YF3G4N	87.4	88.5	86.8	89.0	87.9	-1.44	3.0	1.0	88.8	-1.15	2.7	1.1	12	LC
YL9AXJ	84.6 *H	85.5 *	80.0 X	83.9 *	83.5	-2.98 X	4.3	2.4	82.4	-3.78 X	4.0	3.8	12	LD
YQ44VK	91.6	92.6	93.6	94.1	93.0	0.33	2.8	1.1	93.2	0.66	2.7	1.5	12	LD
YVEVN8	90.5	93.9	93.0 H	91.5	92.2	0.05	6.2	1.5	95.9	1.76	4.8	3.4	12	LZ
YYXAPL	96.6	97.5	94.5	96.6	96.3	1.47	2.9	1.3	97.9	2.56 *	3.3	4.1	11	MB

Consensus (All Labs) Results

Wk Mean	92.15	91.86	92.62	91.81	Month Mean	92.06	Grand Mean	91.63
Avg SDr	3.22	3.09	3.26	3.16	Avg SD	3.25	Avg SD	3.18
SD btwn Labs	3.68	3.22	3.45	3.32	SD btwn Labs	2.87	SD btwn Labs	2.43
Labs Incld	48	47	48	46	SD btwn Wks	2.83	SD btwn Wks	2.69
Labs Excld	2	2	2	3	Labs Incld	47	Labs Incld	45
Labs not Rcvd	0	1	0	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LG	L&W 753
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	RS	Regmed Digital Crush Tester CT-2000
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)		

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 56 lb Linerboard - 56G1

TAPPI Official Test Method T822

Report #616 (A)
January 2021

	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
2EKAVC	144.9	141.2	143.1	143.3	143.1	1.08	4.3	1.5	137.2	0.12	3.7	6.1	12	LZ
2FC6HK	126.8	133.0 H	128.7	127.5	129.0	-1.23	5.1	2.8	136.0	-0.09	4.6	7.8	8	EN
3EG244	143.2	141.7	139.5	141.0	141.4	0.79	5.0	1.5	142.2	1.04	4.9	1.9	12	LD
3QT93P	145.1	142.3	No Data	144.0	143.8	1.19	4.2	1.4	141.9	0.98	4.8	3.5	11	LY
4TT2DY	129.3	130.3	129.6	129.9	129.8	-1.11	3.4	0.4 L	129.3	-1.33	3.5	1.8	12	LC
6LQC8E	140.1	139.2	140.2	139.9	139.9	0.54	2.7	0.4 L	140.0	0.64	2.4	0.4 L	12	LD
6WWXW3	133.5	132.1	132.8	129.8	132.1	-0.73	3.2	1.6	126.9	-1.76	3.8	5.1	12	EN
7DCM8L	139.8	142.0	147.0	142.2	142.8	1.02	2.7	3.0	140.0	0.64	3.6	4.9	12	LC
7NCDQ9	138.8	139.5	139.0	139.0	139.1	0.41	2.7	0.3 L	139.7	0.59	2.7	0.7 L	8	LD
7QZPPD	135.8	127.9	128.4	129.6	130.4	-1.00	2.9	3.6	128.0	-1.56	3.8	3.6	12	LD
8A8G87	118.6 X	120.8 *	125.4	123.3 *	122.0	-2.38 *	3.2	3.0	131.2	-0.98	2.3	7.1	12	RS
8CVT7C	138.9	139.0	138.0	134.5	137.6	0.18	4.5	2.1	136.7	0.04	3.9	4.0	12	TH
9MRGBD	133.6 H	No Data	144.8	No Data	139.2	0.44	8.8	7.9	143.3	1.24	5.1	3.7	10	MB
9PJFPC	147.7 *	152.2 *	151.8 *	150.3 *	150.5	2.28 *	4.7	2.0	149.7	2.41 *	4.9	1.9	8	LD
9ZY32X	132.9	134.7	134.8	135.6	134.5	-0.33	5.1	1.1	133.2	-0.60	4.5	2.3	12	LC
A8UN4H	152.6 X	152.4 *	153.3 *	152.6 *	152.7	2.65 *	3.9	0.4 L	149.8	2.42 *	4.8	2.3	12	LC
B89D49	135.7 L	136.0	135.5 L	129.5	134.1	-0.39	1.8	3.1	136.0	-0.09	2.3	2.6	12	LZ
C48NZ8	138.1	132.6	142.3	139.1	138.0	0.24	3.2	4.1	137.7	0.23	3.3	3.2	12	LC
C6HQNQ	134.5	137.6	140.7	141.1	138.5	0.32	3.6	3.0	137.2	0.13	6.5	3.5	12	LZ
CABVFA	114.7 X	115.5 X	116.0 X	115.6 X	115.5	-3.45 X	4.7	0.5 L	113.8	-4.15 X	4.2	1.9	12	EM
D2V977	137.6	135.8	139.4	138.6	137.8	0.21	3.7	1.6	136.2	-0.06	3.6	2.1	12	LD
E6TAJ9	137.3	136.6 H	137.6 H	139.4	137.7	0.19	5.8	1.2	137.5	0.18	4.9	1.1 L	12	TJ
EWF2H7	136.1 L	135.7	135.5	134.2 L	135.4	-0.19	2.4	0.8	131.5	-0.91	2.6	5.2	12	TU
EXQ366	138.6	141.5	142.0	140.8	140.7	0.68	3.9	1.5	144.4	1.44	4.3	4.2	8	LD
F7JUQ4	140.4	138.8	140.2	142.4	140.4	0.64	4.2	1.5	138.0	0.26	3.9	2.7	12	LD
FTTXQR	133.3	135.1	132.5	135.4	134.1	-0.41	3.8	1.4	134.1	-0.44	3.6	1.5	12	LD
GZAU8L	132.5	130.0	133.2	135.2	132.7	-0.62	4.0	2.1	133.0	-0.63	3.5	2.2	12	LD
J8H82M	144.7	147.3	148.3	147.7	147.0	1.71	4.5	1.6	145.8	1.69	4.7	2.1	12	EX
JCD2YN	125.1 *H	141.7	138.0	89.8 XH	123.7	-2.11 *	11.7	23.7 H	132.1	-0.80	7.8	14.9 H	12	LC
JK942Y	140.1	138.5	135.7	137.2	137.9	0.22	4.2	1.9	137.0	0.08	3.8	1.3	12	LD
JLN4KN	130.1	131.5	130.1	130.3	130.5	-0.99	3.4	0.7 L	131.5	-0.91	3.5	2.2	12	LD
JPZBJ8	137.1	134.6	135.6	135.7	135.7	-0.13	4.1	1.1	132.1	-0.81	5.5	3.7	12	TU
KHG6M2	140.3	143.3	135.7	137.9	139.3	0.45	4.8	3.3	137.9	0.25	5.3	2.3	12	LD
KLFGJ2	141.2	141.8	140.6	139.5	140.8	0.69	3.2	1.0	138.5	0.37	3.2	3.9	12	LZ
L3YWY3	136.5	139.2	139.0	135.2	137.5	0.15	3.7	1.9	135.9	-0.11	3.5	2.6	12	LY

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 56 lb Linerboard - 56G1

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
L6QVDZ	136.5	136.9	134.0	139.9	136.8	0.05	4.2	2.4	136.5	0.01	5.3	3.3	12	LD
NKFHYJ	130.5	132.5	133.6	130.7	131.8	-0.77	3.7	1.5	128.7	-1.43	3.6	2.8	12	LD
PQZW3G	137.9	137.3	137.6	136.5	137.4	0.13	3.7	0.6 L	137.0	0.09	3.7	0.9 L	12	LD
QVKGJ2	131.6	136.9	133.4	142.2 L	136.0	-0.08	3.5	4.6	137.2	0.12	3.5	3.5	12	LC
R97BAL	132.6	132.8	133.9	135.7	133.7	-0.46	3.6	1.4	133.9	-0.49	3.5	1.9	12	LD
RF6X2L	141.0	139.7	136.2	136.8	138.4	0.31	4.1	2.3	140.1	0.65	4.9	2.0	12	LD
RNY4VM	136.3	139.3	135.2	137.2	137.0	0.07	4.2	1.7	136.1	-0.07	3.9	2.2	12	LD
XFMZBG	126.0 *L	128.2	127.2	131.1	128.1	-1.38	2.8	2.2	131.5	-0.92	3.7	2.9	12	EM
YF3G4N	132.0	131.3	133.4	131.5	132.0	-0.74	3.9	0.9	132.7	-0.69	3.7	1.2	12	LC
YL9AXJ	129.0	120.5 *	122.0 *	125.9	124.4	-2.00 *	2.9	3.8	122.4	-2.58 *	2.9	4.4	8	LD
YQ44VK	139.7	140.0	139.8	137.2	139.2	0.44	4.0	1.3	138.9	0.43	3.9	1.4	12	LD
YVEVN8	135.4	132.2	133.6 H	136.1	134.3	-0.36	7.5	1.8	137.2	0.12	5.8	3.5	12	LZ
YYXAPL	143.0	136.5 H	140.5	135.0	138.8	0.36	4.8	3.6	142.4	1.08	4.7	6.6	12	MB

Consensus (All Labs) Results

Wk Mean	136.47	136.73	136.92	136.83	Month Mean	136.54	Grand Mean	136.51
Avg SDr	4.86	4.03	4.19	3.81	Avg SD	4.46	Avg SD	4.23
SD btwn Labs	5.23	6.34	6.31	6.01	SD btwn Labs	6.11	SD btwn Labs	5.47
Labs Incld	45	46	46	45	SD btwn Wks	4.21	SD btwn Wks	4.06
Labs Excld	3	1	1	2	Labs Incld	47	Labs Incld	47
Labs not Rcvd	0	1	1	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W Crush Tester 958
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
RS	Regmed Digital Crush Tester CT-2000	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F3

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
2EKAVC	21.8	22.5 H	21.6 L	23.8 H	22.4	-1.31	2.1	1.0	22.9	-0.85	1.7	0.9	12	LA
2FC6HK	19.4 X	21.2 *	21.2 *	22.1	21.0	-2.67 *	1.6	1.2	22.0	-1.93	1.8	1.3	8	LH
3EG244	22.8	24.0	24.6	24.6	24.0	0.18	1.7	0.8	23.9	0.28	1.9	0.8	12	LW
4GLUWG	25.3	26.0 *	26.2 *	25.0 L	25.6	1.72	1.4	0.6	24.5	0.93	1.5	1.0	12	LA
4TT2DY	24.4	24.5	24.5	24.2	24.4	0.58	1.5	0.2	24.1	0.45	1.7	0.5	12	LW
4X7KVG	26.3 *	28.4 XH	25.0	24.9 H	26.2	2.22 *	2.4	1.6 H	25.9	2.43 *	2.2	1.3	12	LH
6LBTP3	22.4	22.5	22.0	22.4	22.3	-1.37	1.6	0.2	22.3	-1.55	1.5	0.6	12	LW
6WWXW3	22.4	22.3	22.3	22.4	22.3	-1.36	1.7	0.1 L	22.3	-1.55	1.7	0.4	12	LY
7DCM8L	26.5 *	25.6 *	25.6	23.4	25.3	1.39	1.7	1.3	25.3	1.80	1.5	1.0	12	LA
7J3Z9A	23.7	24.8	26.2 *	24.1	24.7	0.85	1.7	1.1	24.4	0.78	2.0	1.2	12	LH
7NCDQ9	23.5	23.7	23.6	23.5	23.6	-0.23	2.0	0.1 L	23.4	-0.30	1.9	0.1 L	12	LA
7QZPPD	24.1	23.5 L	23.4	24.0	23.8	-0.04	1.7	0.4	23.7	0.05	1.7	0.7	8	LH
86F8X8_AL	25.3	23.8	24.8	24.5	24.6	0.76	1.5	0.6	24.4	0.82	1.7	0.7	12	AK
8TMQ97	23.3	23.2	21.6 L	22.7	22.7	-1.03	1.4	0.8	22.7	-1.15	1.4	0.5	12	LH
9MRGBD	24.4	No Data	24.8	No Data	24.6	0.74	1.8	0.3	23.8	0.13	1.9	0.7	10	LA
9X9ZVA_AL	23.9	23.6	23.8	23.1	23.6	-0.21	1.6	0.4	24.4	0.76	1.7	1.8 H	12	AL
9ZY32X	25.6 L	23.9 L	24.2	24.0	24.4	0.57	1.4	0.8	24.1	0.50	1.7	0.7	12	LU
A8UN4H_AL	24.5	23.9	24.6	24.7	24.4	0.59	2.0	0.4	24.9	1.36	1.6	1.4	12	AL
C48NZ8	23.3	22.8	23.6	22.7	23.1	-0.67	1.5	0.4	23.0	-0.81	1.6	0.3	12	LU
C6HQNQ	23.4	23.0	22.5	22.7	22.9	-0.84	1.8	0.4	22.8	-0.97	1.8	0.5	12	LW
D2V977_AL	23.6	23.7	24.1	24.9 L	24.1	0.26	1.5	0.6	24.1	0.48	1.5	0.5	12	AK
DCVYPT	24.8	24.8	25.0	No Data	24.9	1.01	1.7	0.1	24.5	0.92	1.9	0.4	7	LU
DCVYPT_AL	23.7	24.7 L	24.7 L	No Data	24.3	0.51	1.5	0.6	24.3	0.68	1.4	1.1	7	AL
DL72BT	38.4 XH	43.9 XH	41.5 XH	46.2 XH	42.5	17.56 X	19.1	3.4 H	43.8	22.32 X	19.3	2.1 H	12	LH
E6TAJ9	23.8	23.0	23.6	23.2	23.4	-0.39	1.6	0.4	23.4	-0.28	1.5	0.3	12	TT
F7JUQ4	23.2	23.6	23.8	24.5	23.8	-0.01	1.7	0.5	23.4	-0.36	1.7	0.5	12	LY
FTTXQR	22.1	23.3	23.3	22.0	22.7	-1.05	1.6	0.7	23.0	-0.80	1.5	0.5	12	LA
GZAU8L	23.3 H	22.8	22.1	23.4	22.9	-0.84	3.0	0.6	22.9	-0.92	2.0	0.5	12	BK
HXXG3P	24.1	24.3	24.0	24.1	24.1	0.29	1.5	0.1	24.0	0.34	1.6	0.2 L	8	LY
J8H82M	31.7 XL	30.9 XL	31.3 XL	31.7 XL	31.4	7.14 X	0.0	0.4	31.0	8.10 X	0.0	0.8	12	TT
JCD2YN_AL	22.4	22.7	24.3 L	23.0	23.1	-0.67	1.3	0.8	22.3	-1.56	1.5	1.1	12	AL
JK942Y_AL	25.9	24.4	25.0	24.0	24.8	0.97	2.0	0.9	24.3	0.71	1.8	1.1	12	AL
JLN4KN_AL	22.8	23.3	22.8	22.6	22.9	-0.87	1.9	0.3	22.9	-0.89	1.6	0.3	12	AK
JPZBJ8	25.1	25.1	23.9	25.0	24.8	0.92	1.7	0.6	24.4	0.79	1.8	0.6	12	LA
KHG6M2	23.6	24.3	23.3	24.2	23.9	0.08	1.6	0.5	23.8	0.11	1.7	0.7	12	LH

Containerboard Interlaboratory Testing Program
Analysis 223
STFI, 42 lb Linerboard - 42F3
TAPPI Official Test Method T826

Report #616 (A)
January 2021

	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
KLFGJ2	24.0 L	23.8 L	23.5 L	22.7 L	23.5	-0.28	0.2	0.6	24.0	0.30	0.9	0.8	12	XX
L3YWY3	22.3	22.6	24.0	23.4	23.1	-0.65	1.7	0.8	23.1	-0.68	1.6	0.5	12	LU
L6QVDZ	23.6	23.5	23.0	23.7	23.4	-0.33	1.5	0.3	23.6	-0.07	1.6	0.2	12	LA
L6QVDZ_AL	23.8	23.7	23.4	23.5	23.6	-0.19	1.8	0.2	23.4	-0.27	1.6	0.4	12	AL
LLD9RT	24.6	24.3	25.7	24.8	24.8	0.98	1.6	0.6	24.5	0.95	1.6	0.6	8	LH
NKFHYJ	22.7	22.4 H	23.5	24.0	23.1	-0.61	2.0	0.7	23.0	-0.71	2.0	0.7	12	LU
NNB96V	14.3 XL	13.9 X	13.8 XH	13.7 X	13.9	-9.29 X	6.4	0.2	21.0	-3.04 X	4.1	5.3 H	12	XX
PPKZAG	22.9	24.8	22.2	23.2	23.3	-0.50	1.9	1.1	23.1	-0.68	1.9	0.7	12	LY
PPKZAG_AL	42.7 XH	41.4 XL	42.7 XL	40.4 X	41.8	16.88 X	1.9	1.1	41.8	20.10 X	1.9	1.1	4	AL
PQZW3G_AL	22.3	22.4	23.3	22.4	22.6	-1.14	1.9	0.5	22.8	-0.93	1.7	0.6	12	AL
PYQH9E_AL	21.8	22.4	23.7	23.3	22.8	-0.95	1.7	0.9	23.0	-0.72	1.7	0.8	12	AL
PZ3G3N	26.1 *	26.4 X	26.5 *	26.0 *	26.3	2.31 *	1.1	0.2	24.2	0.57	1.5	2.2 H	8	LH
QVKGJ2	23.6	24.0 L	23.3	23.0	23.5	-0.28	1.6	0.4	23.2	-0.59	1.5	0.5	12	LW
RJ8WCD	23.9	23.6	23.1	24.9	23.9	0.08	1.8	0.8	24.2	0.56	1.6	2.4 H	11	LU
RNY4VM	23.5	22.7	22.3	23.4	23.0	-0.77	1.7	0.6	22.8	-0.97	1.6	0.4	12	LZ
RVHART	23.0	23.9	23.4	22.9	23.3	-0.45	1.5	0.4	23.3	-0.40	1.4	0.3	12	TT
TKHXYC	23.4	23.1	23.0	22.8	23.1	-0.68	1.7	0.2	23.0	-0.71	1.7	0.8	12	LH
TKHXYC_AL	25.6	27.2 X	25.4	25.1	25.8	1.90	1.6	1.0	25.8	2.34 *	1.8	0.9	12	XX
TLAWDB_AL	23.6	23.4	23.4	22.2	23.1	-0.61	1.8	0.6	23.1	-0.67	1.9	0.6	12	AL
VXGL4B	25.7	24.8	25.7	No Data	25.4	1.52	2.0	0.5	25.6	2.11 *	2.0	0.6	11	LU
XAG4RG	24.1	24.4	25.3	24.4	24.5	0.68	1.9	0.5	24.8	1.24	1.9	0.7	12	TT
YQ44VK	23.5	23.7	23.3	22.6	23.3	-0.49	1.6	0.5	22.7	-1.05	1.6	0.6	12	LA
YVEVN8_AL	22.1	23.2	22.5	24.9	23.2	-0.59	1.7	1.2	23.3	-0.48	1.5	1.4	12	AL
YYE7GL	23.5	23.8 H	23.7	23.8	23.7	-0.10	1.8	0.2	23.6	-0.11	1.7	0.5	12	XX
YYXAPL	24.0	29.2 X	24.6	24.8	25.7	1.74	1.9	2.4 H	24.8	1.24	1.8	1.5	12	LA
ZJKXYE	22.7 L	23.0 L	23.0 L	23.5 L	23.1	-0.69	0.5	0.3	23.1	-0.70	0.5	0.3	4	LU

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4				
Wk Mean	23.77	23.62	23.80	23.67	Month Mean	23.79	Grand Mean	23.68
Avg SDr	1.79	1.72	1.63	1.67	Avg SD	1.71	Avg SD	1.68
SD btwn Labs	1.17	0.92	1.22	0.96	SD btwn Labs	1.07	SD btwn Labs	0.90
Labs Incld	56	52	57	53	SD btwn Wks	0.73	SD btwn Wks	0.89
Labs Excld	5	8	4	4	Labs Incld	57	Labs Incld	57
Labs not Rcvd	0	1	0	4				

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300
AL	L & W Autoline 400
BK	Buchel Strip Compression Tester BK-155
LA	L&W Autoline (223 Enrollment)
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
2EKAVC	34.3 L	33.9 L	33.2 L	32.6	33.5	-1.13	1.8	0.7	33.1	-1.45	2.0	0.9	12	LA
2FC6HK	28.6 X	29.4 X	30.5 X	30.5 XH	29.7	-3.81 X	2.9	0.9	29.6	-3.96 X	2.7	0.8	8	LH
3EG244	36.5	35.3	35.2	35.9	35.7	0.43	2.7	0.6	35.7	0.49	2.7	0.6	11	LW
4GLUWG	37.3	39.9 X	37.4	38.2 *	38.2	2.18 *	2.5	1.2	37.0	1.40	2.2	1.9	12	LA
4TT2DY	36.3	35.2	36.3	35.6	35.8	0.52	2.1	0.5	35.6	0.42	2.3	1.0	12	LW
4X7KVG	38.9 *	38.9 *H	39.9 X	36.6	38.6	2.44 *	2.8	1.4	37.6	1.86	2.7	1.1	12	LZ
6LBTP3	32.9	33.1	33.6	33.1	33.2	-1.38	2.3	0.3	33.6	-1.05	2.2	0.4	12	LW
6WWXW3	33.3	34.2	33.6	34.3	33.8	-0.90	2.3	0.5	33.1	-1.42	2.3	0.9	12	LY
7DCM8L	38.5 *	36.9	36.8	37.3	37.4	1.60	1.8	0.8	36.6	1.12	1.9	1.2	12	LA
7J3Z9A	35.3	36.5 H	36.5	35.8	36.0	0.65	2.8	0.6	36.0	0.65	2.8	1.3	12	LH
7NCDQ9	35.0	34.9	34.8	35.0	34.9	-0.13	2.9	0.1 L	34.8	-0.17	3.0	0.1 L	8	LA
7QZPPD	37.7 L	34.1	35.5	37.0	36.1	0.68	2.4	1.6	36.1	0.74	2.4	1.6	4	LH
86F8X8_AL	37.0	37.9	38.0	34.3	36.8	1.19	2.8	1.7	35.8	0.57	2.5	1.3	12	AK
8TMQ97	35.5	35.3	33.8	33.4	34.5	-0.43	1.8	1.1	34.2	-0.67	1.7	0.9	12	LH
9MRGBD	35.2	No Data	35.3	No Data	35.3	0.13	2.1	0.1	35.7	0.45	2.4	0.5	10	LA
9X9ZVA_AL	33.9	34.1	34.3	35.0	34.3	-0.56	2.3	0.5	34.2	-0.62	2.5	0.7	12	AL
9ZY32X	36.1	31.1 *	35.5	35.4	34.5	-0.43	2.7	2.3 H	35.5	0.32	2.3	1.6	12	LU
A8UN4H_AL	36.4	37.1	37.2	36.2	36.7	1.14	2.9	0.5	37.7	1.92	3.0	1.1	12	AL
C48NZ8	34.7	33.1	34.2	33.4	33.8	-0.90	2.0	0.7	33.6	-1.07	2.2	0.7	12	LU
C6HQNQ	34.5	33.5	34.3	33.5	34.0	-0.82	2.4	0.5	33.7	-0.97	2.4	0.7	12	LW
D2V977_AL	34.8	34.2	34.3	35.6 H	34.7	-0.27	2.5	0.6	35.0	-0.08	2.1	0.8	12	XX
DCVYPT	36.5	35.1	37.4	No Data	36.4	0.89	2.5	1.2	35.8	0.54	2.3	0.8	11	LA
DCVYPT_AL	35.6	35.6	No Data	No Data	35.6	0.34	1.5	0.0	35.8	0.50	1.8	1.4	10	AL
DL72BT	45.8 XH	49.2 XH	45.7 XH	49.5 XH	47.5	8.79 X	22.2	2.1 H	47.2	8.86 X	22.2	1.7	12	LH
E6TAJ9	34.9	35.3	35.4	35.7	35.3	0.14	1.8	0.3	35.2	0.07	1.7	0.3 L	12	TT
F7JUQ4	33.5	36.5	36.2	35.4	35.4	0.21	2.3	1.4	34.8	-0.20	2.2	1.1	12	LZ
FTTXQR	33.4	32.6	34.5	33.8	33.6	-1.09	1.9	0.8	33.6	-1.06	2.0	0.7	12	LW
GZAU8L	34.8	33.1	32.4	33.7 L	33.5	-1.15	1.8	1.0	33.6	-1.04	1.8	0.7	12	BK
HXXG3P	34.9	35.5	35.5	35.0	35.2	0.08	2.0	0.3	35.1	0.03	2.2	0.4	12	LU
J8H82M	45.1 XL	48.2 XL	44.1 XL	45.1 XL	45.6	7.46 X	0.0	1.8	45.1	7.30 X	0.0	1.4	12	LZ
JCD2YN_AL	33.2	33.4 L	36.3	34.0	34.2	-0.64	1.9	1.4	33.0	-1.50	1.8	1.5	12	AL
JK942Y_AL	35.9 L	36.9	35.6 L	36.1	36.1	0.73	2.2	0.6	35.2	0.09	2.4	1.5	11	AL
JLN4KN_AL	33.4	33.1	34.4	32.7	33.4	-1.23	2.1	0.7	33.7	-0.99	2.2	1.1	12	AK
JPZBJ8	36.7	36.8 H	37.0 L	36.5	36.7	1.15	2.7	0.2	37.0	1.44	2.4	1.0	12	LA
KHG6M2	35.0	35.4	33.1	34.8	34.6	-0.39	2.1	1.0	34.9	-0.10	2.4	1.0	12	LH

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 56 lb Linerboard - 56G1

TAPPI Official Test Method T826

Report #616 (A)
January 2021

	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
KLFGJ2	34.4 L	34.1 L	33.3 L	33.8 L	33.9	-0.85	0.3	0.5	27.7	-5.36 X	0.3	9.9 H	12	XX
L3YWY3	32.6	35.0	33.7	34.5	34.0	-0.82	2.3	1.1	33.9	-0.88	2.3	0.6	12	LU
L6QVDZ	34.0	34.9	35.1	34.9	34.7	-0.27	2.4	0.5	34.8	-0.17	2.2	0.4	12	LA
L6QVDZ_AL	34.8	34.9	34.3	35.1	34.7	-0.26	2.3	0.3	34.6	-0.33	2.4	0.4	12	AL
LLD9RT	37.1	37.7	38.0	35.4	37.0	1.37	2.3	1.2	36.4	0.95	2.4	1.0	12	LH
NKFHYJ	33.4	34.5	33.6	35.5	34.2	-0.62	2.8	1.0	33.3	-1.30	2.7	1.0	12	LU
NNB96V	33.3	34.7	35.5	34.6 L	34.5	-0.42	1.7	0.9	35.0	-0.06	2.5	1.1	12	XX
PPKZAG	34.0	35.3	33.3	35.3	34.5	-0.45	2.5	1.0	34.3	-0.58	2.2	1.1	12	LY
PPKZAG_AL	44.6 X	44.1 X	47.1 X	42.8 XH	44.6	6.76 X	2.8	1.8	44.6	6.99 X	2.8	1.8	4	AL
PQZW3G_AL	34.2	33.0	33.8	35.4 L	34.1	-0.72	2.1	1.0	34.4	-0.48	2.1	1.1	12	XX
PYQH9E_AL	34.0 H	34.1	34.2	34.4	34.2	-0.64	2.5	0.2 L	34.1	-0.71	2.2	0.7	12	XX
PZ3G3N	37.5	37.1 L	38.1 *L	36.9	37.4	1.62	1.4	0.5	37.6	1.86	1.5	0.5	8	LH
QVKGJ2	35.7 L	35.6	35.6	35.1 L	35.5	0.27	1.7	0.3	34.6	-0.30	2.3	0.7	12	ID
RJ8WCD	34.4 H	34.6	35.6	36.1	35.2	0.04	2.7	0.8	35.6	0.40	2.7	1.9	12	LU
RNY4VM	34.2	32.6	33.1	33.8	33.4	-1.20	2.6	0.7	34.0	-0.79	2.4	0.7	12	LZ
RVHART	35.4 L	35.3	36.1	35.3	35.5	0.29	1.6	0.4	35.3	0.20	1.5	0.5	12	TT
TKHXYC	32.4 H	33.4	32.9	32.4	32.8	-1.66	4.3	0.5	33.1	-1.42	3.1	0.9	12	LH
TKHXYC_AL	37.7	37.9	37.5	36.6	37.4	1.64	2.0	0.6	37.8	2.00 *	2.2	1.2	12	XX
TLAWDB_AL	32.8	32.8	34.1	32.2 *	33.0	-1.51	2.3	0.8	33.1	-1.42	2.2	0.8	12	AL
VXGL4B	37.3	37.3	37.8	No Data	37.4	1.64	2.3	0.3	36.9	1.37	2.6	0.8	11	LU
XAG4RG	35.3	35.3	36.0	35.4 H	35.5	0.26	3.0	0.3	36.1	0.78	2.5	1.6	12	TT
YQ44VK	33.3	34.8	33.1	33.9	33.8	-0.93	2.3	0.8	33.8	-0.89	2.3	0.6	12	LU
YVEVN8_AL	34.9	33.0	34.2	34.9	34.2	-0.62	2.7	0.9	35.3	0.21	2.2	1.6	12	AL
YYE7GL	34.7	35.1	35.0	35.3	35.0	-0.06	1.9	0.3	35.0	-0.03	2.2	0.6	12	XX
YYXAPL	34.7	43.5 XH	33.8	38.3 *	37.6	1.74	3.1	4.4 H	38.2	2.28 *	2.5	4.0 H	12	LA
ZJKXYE	33.2 L	34.3 L	33.8 L	34.1 L	33.8	-0.90	0.8	0.5	33.8	-0.90	0.8	0.5	4	LU

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4		Monthly		Cumulative
Wk Mean	35.04	34.92	35.07	35.00	Month Mean	35.11	Grand Mean	35.06
Avg SDr	2.49	2.20	2.31	2.30	Avg SD	2.33	Avg SD	2.29
SD btwn Labs	1.55	1.62	1.53	1.36	SD btwn Labs	1.41	SD btwn Labs	1.37
Labs Incld	57	54	55	53	SD btwn Wks	1.02	SD btwn Wks	1.14
Labs Excld	4	6	5	4	Labs Incld	57	Labs Incld	56
Labs not Rcvd	0	1	1	4				

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
BK	Buchel Strip Compression Tester BK-155	ID	IDM Compression Tester
LA	L&W Autoline (224 Enrollment)	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
3EG244	118.5	-1.42	10.44		122.0	-1.58	3.49	4	XX
4TT2DY	134.3	-0.20	5.40	L	136.4	-0.31	3.18	4	LS
4X7KVG	157.6	1.60	15.33		163.1	2.05 *	10.24	4	LS
6WWXW3	149.4	0.96	16.88		147.5	0.67	3.09	4	EV
7DCM8L	112.5	-1.89	7.18	L	118.0	-1.92 *	7.43	3	EV
7J3Z9A	140.8	0.30	14.89		146.6	0.59	29.18	4	EV
7NCDQ9	141.9	0.39	17.82		142.0	0.18	1.52 L	4	LS
86F8X8_AL	127.2	-0.75	13.35		143.4	0.32	23.00	4	AK
9MRGBD	147.5	0.82	19.50		133.3	-0.58	12.63	4	LA
9PJFPC	169.6	2.53 *	42.28	H	134.4	-0.48	30.67	3	EV
9X9ZVA_AL	120.2	-1.29	12.30		128.2	-1.03	5.94	4	AL
9ZY32X	221.4	6.54 X	39.61	H	162.3	1.97 *	39.65 H	4	EV
A8UN4H_AL	131.3	-0.44	8.87		143.9	0.35	10.99	4	AL
C6HQNQ	136.0	-0.07	18.36		140.7	0.07	6.51	4	EV
D2V977	137.2	0.02	13.70		136.7	-0.28	5.31	4	EV
DCVYPT_AL	128.1	-0.68	14.61		126.5	-1.17	1.50 L	3	AL
FTTXQR	145.6	0.67	19.67		140.7	0.07	3.67	4	LA
G3DPQN	125.4	-0.89	11.87		123.2	-1.47	12.30	3	LS
JCD2YN_AL	141.6	0.36	25.88		145.4	0.49	3.66	3	AL
JLN4KN	120.0	-1.31	14.70		150.4	0.93	56.69 H	4	LS
JPZBJ8	141.1	0.32	9.56		145.5	0.49	8.04	4	LA
L6QVDZ	147.9	0.85	18.99		204.0	5.65 X	66.74 H	4	LA
L6QVDZ_AL	145.9	0.70	11.81		145.6	0.50	4.16	4	AL
NKFHYJ	151.5	1.13	12.40		155.9	1.41	4.30	4	EV
PPKZAG_AL	240.3	8.00 X	19.13		240.3	8.85 X	0.00	1	AL
RJ8WCD	140.8	0.30	10.79		143.2	0.29	3.22	4	EV
TKHXYC_AL	122.1	-1.15	18.72		126.4	-1.18	3.36	4	XX
TLAWDB_AL	131.3	-0.43	21.79		140.6	0.06	8.60	4	AL
YVEVN8_AL	129.0	-0.61	16.79		128.7	-0.99	6.81	4	XX
YYXAPL	139.2	0.18	18.26		145.9	0.53	8.49	4	LA

Consensus (All Labs) Results

Month Mean	136.90	Grand Mean	139.87
Avg SD	17.19	Avg SD Months	17.09
SD btwn Labs	12.92	SD btwn Labs	11.35
Labs Incld	28	Labs Incld	28

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
EV	Emveco Microgage Model 210-R	LA	L&W Autoline (228 Enrollment)
LS	L&W 263	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42F3

TAPPI Official Test Method T538

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4GLUWG	368.2	0.82	4.37		367.7	0.74	3.43	3	XX
86F8X8_AL	354.1	-0.60	6.33		355.9	-0.51	3.65	3	AK
9X9ZVA_AL	345.5	-1.48	9.17		350.0	-1.13	4.28	3	AL
C48NZ8	365.3	0.53	6.48		364.2	0.37	1.36	3	XX
CABVFA	412.8	5.34 X	30.90 H		410.7	5.28 X	7.35	3	TS
D2V977	357.1	-0.30	7.64		357.1	-0.38	0.00	1	LA
D2V977_AL	354.3	-0.58	5.08		352.5	-0.86	1.53	3	AK
JK942Y	354.6	-0.55	5.56		361.2	0.06	13.17 H	3	PP
L6QVDZ_AL	354.8	-0.53	6.48		351.5	-0.97	3.51	3	AL
N39KDY	371.5	1.16	12.14		379.0	1.93 *	8.96	3	TS
PPKZAG_AL	376.6	1.67	6.13		376.6	1.68	0.00	1	AL
PQZW3G_AL	377.2	1.73	12.59		369.7	0.95	7.21	3	AL
PYQH9E_AL	356.4	-0.37	7.49		355.3	-0.57	1.63	3	AL
RNY4VM	354.7	-0.54	10.97		358.2	-0.26	4.08	3	XX
TKHXYC_AL	350.7	-0.95	6.46		350.8	-1.05	0.90 L	3	XX

Consensus (All Labs) Results

Month Mean	360.07	Grand Mean	360.69
Avg SD	8.03	Avg SD Months	5.67
SD btwn Labs	9.88	SD btwn Labs	9.47
Labs Incld	14	Labs Incld	14

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
LA	L & W Autoline (229 Enrollment)	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 - 42F
TAPPI Official Test Method T569

Report #616 (A)
January 2021

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4GLUWG	87.2	-0.67	2.17		86.6	-0.97	1.85 L	4	SC
4X7KVG	85.8	-0.79	4.38		124.4	2.24 *	39.95 H	4	TM
7DCM8L	89.4	-0.47	4.39		90.8	-0.61	2.02	4	TM
7J3Z9A	103.6	0.83	4.10		107.6	0.82	6.25	4	SC
86F8X8	81.6	-1.18	1.52		85.5	-1.06	3.02	4	TM
9PJFPC	95.4	0.08	9.34		98.6	0.05	2.88	3	HY
9ZY32X	79.0	-1.42	3.39		80.6	-1.48	3.98	4	TM
A8UN4H	110.0	1.42	3.54		117.8	1.68	5.44	4	SC
C48NZ8	109.6	1.38	2.64		108.8	0.92	1.22 L	4	HY
D2V977	85.2	-0.85	2.05		83.5	-1.23	1.81 L	4	TM
F7JUQ4	91.4	-0.28	5.08		87.1	-0.92	4.86	4	XX
FTTXQR	107.6	1.20	10.01		112.7	1.25	3.79	4	HY
G3DPQN	102.2	0.70	3.11		99.5	0.13	4.11	4	HY
JCD2YN	201.0	9.74 X	5.48		193.5	8.11 X	12.08	3	SC
JK942Y	108.8	1.31	3.11		107.8	0.83	1.42 L	4	HY
JLN4KN	92.5	-0.19	6.09		93.8	-0.35	8.20	4	TM
L6QVDZ	90.2	-0.39	9.15		92.2	-0.49	2.63	4	TM
MAZ9VY	89.8	-0.43	0.48 L		92.5	-0.46	4.42	4	TM
NKFHYJ	91.2	-0.30	3.90		90.9	-0.60	2.56	4	TM
PQZW3G	41.8	-4.82 X	0.77 L		42.0	-4.75 X	0.69 L	4	LZ
PYQH9E	100.0	0.51	5.22		95.7	-0.19	3.34	4	SC
QLXHRW	113.0	1.69	8.22		107.3	0.79	4.17	4	TM
RJ8WCD	70.8	-2.17 *	4.27		80.2	-1.51	8.40	4	TM
XX7U26	85.7	-0.80	15.44 H		100.0	0.17	31.79 H	3	SC
YQ44VK	99.6	0.47	4.34		104.1	0.52	3.68	4	HZ
YVEVN8	98.2	0.34	3.83		103.8	0.49	5.48	4	TM

Consensus (All Labs) Results

Month Mean	94.49	Grand Mean	97.97
Avg SD	5.96	Avg SD Months	11.22
SD btwn Labs	10.94	SD btwn Labs	11.78
Labs Incld	24	Labs Incld	24

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	93.39	10.72	1.10	21
Modified Scott Bond Mechanics	108.62	1.44	14.13	2

Analysis Notes

PQZW3G - 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
3EG244	27.0	-0.27	3.39		30.4	0.92	3.22	4
4GLUWG	28.2	0.12	1.10		28.8	0.35	0.44	4
4TT2DY	29.9	0.67	5.98		30.3	0.88	1.77	4
4X7KVG	22.0	-1.88	4.06		22.8	-1.68	1.49	4
6WWXW3	28.6	0.25	0.55	L	28.4	0.23	0.96	4
7J3Z9A	26.0	-0.59	6.40		28.0	0.10	1.82	4
7NCDQ9	26.8	-0.33	0.84		26.6	-0.38	0.49	4
86F8X8	29.3	0.47	5.22		29.5	0.61	0.29 L	4
9X9ZVA	28.0	0.05	2.79		29.4	0.57	1.05	4
9ZY32X	28.6	0.25	3.21		27.3	-0.14	1.88	4
A8UN4H	23.2	-1.49	1.30		24.7	-1.05	1.18	4
C48NZ8	25.7	-0.69	1.03		25.0	-0.94	1.78	4
C6HQNQ	22.6	-1.69	3.91		25.4	-0.79	2.04	4
D2V977	28.9	0.33	2.55		27.5	-0.07	1.63	4
EXQ366	29.4	0.51	4.67		28.1	0.13	1.84	2
F7JUQ4	21.4	-2.07 *	3.23		20.3	-2.53 *	2.85	4
FTTXQR	29.8	0.63	4.49		31.1	1.16	1.89	4
JCD2YN	32.4	1.47	1.82		29.3	0.55	6.74 H	3
JK942Y	30.0	0.70	1.58		29.6	0.64	1.29	4
JLN4KN	28.7	0.28	5.93		27.7	0.00	1.73	4
KHG6M2	30.1	0.73	2.63		30.0	0.79	0.22 L	4
L6QVDZ	26.6	-0.40	1.82		24.3	-1.17	1.60	4
NKFHYJ	31.0	1.02	3.00		28.3	0.18	2.61	4
PQZW3G	29.0	0.38	0.71	L	27.6	-0.06	4.68 H	4
R97BAL	32.0	1.34	1.22		32.1	1.48	0.25 L	4
RJ8WCD	29.6	0.57	5.27		30.6	0.99	2.26	4
RNY4VM	31.2	1.09	5.67		30.1	0.82	1.36	4
T92BMQ	33.2	1.73	2.17		32.4	1.58	0.66	4
TLAWDB	25.8	-0.65	3.56		24.8	-1.00	0.71	4
TPB3PV	23.6	-1.36	0.55	L	24.1	-1.25	0.64	4
YVEVN8	28.9	0.34	5.69		29.9	0.76	1.70	4
YYXAPL	23.2	-1.49	3.63		22.7	-1.70	4.18	4

Consensus (All Labs) Results

Month Mean	27.83	Grand Mean	27.71
Avg SD	3.60	Avg SD Months	2.25
SD btwn Labs	3.10	SD btwn Labs	2.93
Labs Incld	32	Labs Incld	32

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
3EG244	22.6	0.06	2.17		21.4	-0.69	0.92	4	LP
4TT2DY	22.5	-0.04	1.25		22.5	0.08	0.00	1	LP
4X7KVG	24.1	1.10	3.07		23.9	1.16	1.76	4	TD
7J3Z9A	21.9	-0.45	2.31		22.2	-0.11	0.30	4	LP
7NCDQ9	21.7	-0.56	1.49		21.5	-0.62	0.27	4	LA
86F8X8_AL	19.6	-1.98 *	3.09		19.4	-2.22 *	1.42	4	AK
9X9ZVA_AL	20.8	-1.20	1.24		21.5	-0.63	0.50	4	AL
9ZY32X_AL	22.8	0.22	1.66		23.4	0.75	0.44	4	AL
A8UN4H_AL	19.5	-2.08 *	1.27		20.1	-1.66	1.44	4	AL
B89D49	19.6	-2.01 *	1.35		21.6	-0.56	1.34	4	XX
BDXQ7W	21.3	-0.82	1.98		20.8	-1.19	0.82	2	GA
C48NZ8	22.4	-0.10	2.74		21.8	-0.45	0.58	4	TP
C6HQNQ	17.9	-3.21 X	2.01		18.8	-2.62 *	0.64	4	XX
D2V977_AL	21.3	-0.85	1.75		21.7	-0.48	0.39	3	AK
DCVYPT_AL	21.8	-0.49	1.40		22.4	0.01	0.74	3	AL
F7JUQ4	22.4	-0.07	1.25		22.6	0.21	0.43	4	LP
FTTXQR	22.0	-0.36	1.49		22.4	-0.01	0.40	4	LP
G3DPQN	23.3	0.55	1.09		22.6	0.15	1.06	4	LP
JCD2YN_AL	23.3	0.53	1.81		21.9	-0.31	1.22	3	AL
JK942Y	24.6	1.46	4.43 H		21.8	-0.39	2.03 H	4	TP
JPZBJ8	23.4	0.64	1.97		23.7	1.02	0.27	4	LA
KCRKJK	22.1	-0.31	1.04		21.7	-0.48	0.40	4	LP
L6QVDZ	25.0	1.70	2.89		25.3	2.16 *	0.65	4	LA
L6QVDZ_AL	24.4	1.31	2.31		24.6	1.67	0.54	4	AL
NKFHYJ	23.6	0.77	3.34		24.8	1.78	1.05	4	GA
PPKZAG_AL	22.1	-0.32	1.08		22.1	-0.22	0.00	1	AL
PQZW3G_AL	23.9	0.96	0.85 L		22.8	0.32	1.15	4	AL
PYQH9E_AL	22.8	0.22	1.83		22.4	0.01	0.86	4	AL
R97BAL	22.2	-0.21	1.39		17.6	-3.48 X	7.53 H	4	LA
RF6X2L	21.2	-0.94	1.40		21.6	-0.55	0.86	4	XX
RJ8WCD_AL	21.9	-0.44	1.64		22.8	0.35	1.56	3	AL
RNY4VM	24.9	1.66	3.10		24.0	1.21	0.75	4	GA
T92BMQ_AL	23.1	0.40	3.38		22.9	0.38	0.55	3	AL
TKHXYC_AL	23.1	0.41	1.36		23.7	1.03	0.49	4	XX
TLAWDB_AL	23.4	0.61	1.92		22.3	-0.05	0.92	4	AL
YL9AXJ	21.4	-0.77	2.76		22.5	0.09	2.20 H	4	GG
YVEVN8_AL	24.3	1.26	2.23		23.3	0.73	0.94	4	XX
YYXAPL	20.7	-1.23	1.30		21.4	-0.70	0.48	4	LA
ZAUFK7	24.5	1.39	1.27		23.5	0.83	1.00	4	LP

Containerboard Interlaboratory Testing Program

Analysis 237

Air Resistance, 42 lb Linerboard - 42F

TAPPI Official Test Method T460

Consensus (All Labs) Results

Month Mean	22.52	Grand Mean	22.36
Avg SD	2.11	Avg SD Months	1.00
SD btwn Labs	1.45	SD btwn Labs	1.36
Labs Incld	38	Labs Incld	38

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision #4320 Densometer
LA	L&W Autoline (237 Enrollment)	LP	L&W Air Permeance Tester SE 166
TD	TMI Gurley Densometer	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
2FC6HK	56.2	60.0	57.8	57.4	57.9	0.07	4.0	1.6	52.8	-1.95 *	3.9	4.8 H	12	EN
36RD8F	59.0 L	57.9	57.7	57.7	58.1	0.18	1.8	0.6	58.3	0.27	2.1	1.0	16	LC
3EG244	60.6	58.0	60.5	59.5	59.7	0.94	3.7	1.2	58.2	0.25	3.1	1.6	16	LD
3QT93P	61.2	58.6	64.5 *	61.6	61.5	1.80	3.9	2.4	59.0	0.57	3.7	5.8 H	14	LD
4HXTTB	66.2 X	63.6	64.6 *	67.1 X	65.4	3.67 X	4.5	1.6	63.4	2.37 *	4.4	2.7	16	TX
4VH9WB	55.2	54.7	56.8	55.4	55.5	-1.03	3.2	0.9	56.5	-0.45	3.5	2.0	16	TH
6LQC8E	58.3	58.4	58.8	59.1	58.7	0.46	3.8	0.4	59.0	0.56	3.4	0.3 L	16	LD
6WWXW3	60.4	59.3	62.1	58.7	60.1	1.16	3.3	1.5	59.0	0.59	3.9	1.4	16	EN
7DCM8L	62.1	66.0 *	64.9 *	62.7 *	63.9	2.98 X	2.7	1.8	61.6	1.65	2.8	3.1	16	LC
7NCDQ9	57.7	58.4	59.1	58.9 L	58.5	0.40	1.9	0.6	58.1	0.21	1.9	0.6	16	LD
7QZPPD	52.4 *	51.1 *	56.8	55.2	53.9	-1.83	3.0	2.6	53.6	-1.63	2.8	2.7	8	LD
86F8X8	51.8 *	51.7 *	53.2	54.3	52.8	-2.37 *	4.6	1.2	51.5	-2.46 *	3.9	2.3	16	LD
8TMQ97	58.2	59.0	58.7	60.3	59.0	0.64	2.6	0.9	58.5	0.37	2.4	1.0	16	EN
9MRGBD	54.3 L	55.1	55.3	54.6	54.8	-1.38	3.1	0.4	54.4	-1.29	3.4	1.7	16	MB
9ZY32X	55.4	60.3	59.0	57.9	58.2	0.22	3.1	2.1	57.5	-0.05	3.9	2.2	16	LC
BDXQ7W	58.1	62.3	57.1	57.9	58.9	0.55	4.1	2.3	58.2	0.25	3.6	1.7	8	LD
C48NZ8	58.1	55.3	56.0	53.9	55.8	-0.90	3.6	1.8	57.3	-0.11	3.8	1.8	16	LC
E6TAJ9	58.7	56.9	59.2	56.5	57.8	0.06	4.1	1.3	58.1	0.20	4.4	1.1	16	TJ
EWF2H7	59.3	59.1	57.2	62.4 *	59.5	0.86	2.4	2.2	59.4	0.75	2.2	1.3	12	TU
F7JUQ4	58.5	59.7	59.0	57.3	58.6	0.45	4.4	1.0	57.7	0.05	4.3	1.9	16	LZ
FTTXQR	55.5	54.5	55.0	53.1	54.5	-1.52	3.9	1.0	55.5	-0.83	3.4	1.1	12	LD
GX4C9Q	58.3	57.7	57.0	57.3	57.6	-0.06	4.2	0.6	57.9	0.11	3.8	0.6	16	LD
HXXG3P	59.5	58.5	58.0	59.1	58.8	0.52	3.7	0.7	58.7	0.44	4.2	1.0	12	LD
J8H82M	55.2	57.7	57.9	57.9 L	57.2	-0.25	3.1	1.3	58.6	0.41	3.1	1.5	16	EM
JK942Y	59.1	58.5	58.8	57.3	58.4	0.34	4.5	0.8	56.4	-0.47	3.9	1.7	16	LD
JPZBJ8	58.8	61.3	60.0	58.9	59.8	1.00	4.3	1.2	58.4	0.35	4.9	2.4	16	TU
KCRKJK	61.8	61.6	62.8	58.0	61.1	1.61	4.3	2.1	61.4	1.54	4.3	1.6	16	LD
KHG6M2	57.9	58.1	53.9	56.7	56.6	-0.52	4.0	1.9	58.6	0.43	3.6	1.8	16	LD
L3YWY3	58.8	60.7	57.4	56.7	58.4	0.33	3.6	1.7	58.0	0.18	3.6	2.1	16	LZ
L6QVDZ	56.3	55.6	56.3	57.4	56.4	-0.63	3.5	0.7	57.7	0.06	4.0	1.9	16	LD
LLD9RT	64.3 *	63.6	66.1 *	65.3 X	64.8	3.42 X	3.8	1.1	61.3	1.49	3.7	2.8	12	LD
NKFHYJ	61.3	58.7	56.8	59.6	59.1	0.67	4.1	1.9	57.3	-0.12	3.5	1.9	16	LD
NNB96V	62.4 L	60.5 L	64.0 L	60.6 L	61.9	2.00 *	1.1	1.7	60.9	1.35	1.5	1.9	16	XX
PPKZAG	58.3	58.3	57.0	57.6	57.8	0.05	4.2	0.6	58.4	0.33	3.9	1.2	16	LD
PQZW3G	54.3	54.3	55.0	53.4	54.3	-1.65	3.4	0.6	53.6	-1.61	3.5	1.1	16	LD

	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
PZ3G3N	58.6	53.3	55.9	57.8	56.4	-0.63	4.5	2.3	54.4	-1.29	3.6	2.1	12	LD
QVKGJ2	57.4	57.4	59.6	58.7	58.3	0.28	3.3	1.1	58.5	0.39	3.6	0.9	16	LD
RNY4VM	58.0	58.7	58.2	57.2	58.0	0.15	3.3	0.6	57.0	-0.22	3.2	1.8	16	LZ
RVHART	56.8	58.6	56.7	53.9	56.5	-0.59	4.8	1.9	57.2	-0.14	5.4	1.3	16	TG
RY4QAE	57.5 L	57.5 L	57.4 L	57.5 L	57.5	-0.11	1.3	0.0 L	57.8	0.08	1.4	0.3 L	16	LD
TLAWDB	54.3	60.5	55.8	56.2	56.7	-0.47	3.6	2.6	56.6	-0.39	4.0	2.0	16	LZ
TPB3PV	61.0	55.5	59.9	56.2	58.2	0.22	3.7	2.7	56.3	-0.52	3.5	2.1	16	LZ
V3NC7G	59.2	59.5 L	59.3	59.6 L	59.4	0.82	2.1	0.2 L	59.4	0.74	1.9	0.3 L	16	LD
WFRX98	56.8	57.9	57.5	58.0	57.6	-0.07	4.2	0.5	58.0	0.18	3.6	0.7	16	LC
XJPXL9	58.9	58.1	60.1	60.7	59.4	0.83	3.3	1.2	58.2	0.23	3.6	1.1	16	LD
XX7U26	53.7	53.7	53.6	53.4	53.6	-1.96 *	3.5	0.2 L	53.8	-1.55	3.3	1.0	12	LC
YQ44VK	52.1 *	56.0	56.0	54.6	54.6	-1.46	3.4	1.8	54.9	-1.08	3.4	1.5	16	LD
YT66X4	60.9	60.3	60.3	62.0	60.9	1.53	3.4	0.8	61.7	1.66	5.5	1.5	16	LD
YYXAPL	55.5 H	59.3	53.3 H	56.2	56.1	-0.78	5.8	2.5	52.5	-2.06 *	5.7	5.3 H	14	MB
ZAUFK7	58.1	56.7	57.0	59.8	57.9	0.08	3.0	1.4	58.0	0.17	3.1	1.0	16	LD

Consensus (All Labs) Results

Wk Mean	57.88	58.16	58.30	57.64	Month Mean	57.70	Grand Mean	57.59
Avg SDr	3.74	3.70	3.59	3.52	Avg SD	3.63	Avg SD	3.65
SD btwn Labs	2.74	2.91	3.01	2.40	SD btwn Labs	2.09	SD btwn Labs	2.46
Labs Incld	49	50	50	48	SD btwn Wks	1.51	SD btwn Wks	2.08
Labs Excld	1	0	0	2	Labs Incld	47	Labs Incld	50
Labs not Rcvd	0	0	0	0				

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
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
TX	TMI Crush Tester (model not specified)	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 250

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

TAPPI Official Test Method T843

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2FC6HK	56.4 *	60.8 X	59.5 X	58.1 X	58.7	-4.95 X	2.5	1.9	58.9	-7.11 X	2.9	1.4	12	EN
3EG244	72.3	70.8	70.2	71.3	71.2	1.14	4.2	0.9	71.4	1.64	4.2	1.6	16	LD
6WWXW3	69.7	71.9	70.7	71.0	70.8	0.97	4.3	0.9	70.5	1.00	3.5	1.6	16	XX
7NCDQ9	68.9	69.6	69.0	69.7	69.3	0.24	2.1	0.4	68.7	-0.25	1.8	0.5 L	16	LD
86F8X8	66.5	68.6	66.0	62.0 *	65.8	-1.48	3.3	2.8	68.0	-0.75	5.9	3.6	16	LD
9ZY32X	61.9 H	72.1	70.1	67.5	67.9	-0.45	5.2	4.4 H	68.5	-0.40	5.1	5.0 H	16	LC
B89D49	68.7 L	68.9 L	68.9	68.9	68.8	0.01	1.8	0.1 L	68.7	-0.26	2.1	1.2	16	LZ
C48NZ8	70.5	69.9	70.9	69.1	70.1	0.63	3.0	0.8	70.5	1.00	2.8	1.9	16	LC
DL72BT	56.4 *	55.3 XH	57.3 X	53.8 X	55.7	-6.42 X	4.6	1.5	56.8	-8.56 X	4.7	1.4	16	LD
FTTXQR	71.4	69.8	72.7	74.0 *	72.0	1.54	3.0	1.8	72.7	2.53 *	3.3	1.5	12	LD
GZAU8L	65.5	67.1	70.3	66.3	67.3	-0.74	3.4	2.1	68.2	-0.59	3.3	1.4	16	LD
JK942Y	69.0	72.9	69.7	68.5	70.0	0.59	3.7	2.0	69.6	0.40	3.8	1.5	16	LD
KCRKJK	64.1	66.1	69.7	64.8	66.1	-1.31	4.0	2.5	67.7	-0.93	3.2	2.0	16	LD
L3YWY3	67.3	66.4	66.3	67.9	67.0	-0.90	3.3	0.7	67.8	-0.89	3.2	1.8	16	LZ
L6QVDZ	65.9	70.5	67.3	66.5	67.6	-0.61	3.6	2.0	67.8	-0.88	4.0	1.8	16	LD
NNB96V	69.8 L	71.7 L	73.6 L	72.0 L	71.8	1.45	1.0	1.6	69.7	0.46	1.1	2.7	16	XX
PQZW3G	66.9	64.9 *	66.9	64.4	65.8	-1.48	3.5	1.3	67.5	-1.13	3.4	1.3	16	LD
QVKGJ2	71.2	70.9	73.3	71.3	71.7	1.40	2.8	1.1	70.6	1.07	2.8	2.2	16	LD
RY4QAE	68.6 L	68.5 L	68.5 L	68.6	68.5	-0.14	1.4	0.1 L	68.9	-0.09	1.6	0.4 L	16	LD
TLAWDB	65.4	67.9	64.2 *	68.7	66.5	-1.11	3.7	2.1	67.6	-1.02	3.8	2.0	16	LZ
WFRX98	69.2	68.4	68.1	68.0	68.4	-0.19	4.3	0.5	68.6	-0.34	4.1	0.5 L	16	LD
ZAUFK7	70.9	71.0	68.0	68.8	69.7	0.42	4.0	1.5	68.2	-0.57	3.5	1.6	16	LD

Consensus (All Labs) Results

Wk Mean	67.11	69.39	69.21	68.45	Month Mean	68.81	Grand Mean	69.06
Avg SDr	3.71	3.16	3.30	3.53	Avg SD	3.44	Avg SD	3.50
SD btwn Labs	4.32	2.18	2.43	2.80	SD btwn Labs	2.04	SD btwn Labs	1.43
Labs Incld	22	20	20	20	SD btwn Wks	1.80	SD btwn Wks	2.07
Labs Excld	0	2	2	2	Labs Incld	20	Labs Incld	20
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

EN	Emerson 2200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 255

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

TAPPI Official Test Method T822

Report #616 (A)
January 2021

	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
2EKAVC	44.8	45.5	46.9	46.8	46.0	0.79	3.7	1.1	44.5	0.22	3.9	2.5	16	LZ
2FC6HK	38.8 *	42.6	41.2	43.1	41.4	-1.61	3.0	1.9	42.7	-0.73	4.0	2.0	12	XX
36RD8F	47.4 L	47.1 L	47.0	47.3	47.2	1.42	1.6	0.2 L	47.8	1.94 *	2.9	1.1	16	LC
3QT93P	45.1	48.3 *	45.8	46.9	46.5	1.07	4.2	1.4	46.6	1.28	3.4	3.5	14	LZ
4HXTTB	43.3	43.0	46.2	44.4	44.2	-0.14	4.2	1.4	42.8	-0.66	3.9	2.4	16	LZ
4VH9WB	34.5 X	34.6 X	37.3 X	33.4 X	34.9	-5.02 X	2.4	1.6	35.3	-4.58 X	2.6	1.7	16	TH
6LQC8E	43.8	44.1	44.0	43.6	43.9	-0.32	2.6	0.3	43.8	-0.15	2.5	0.2 L	16	LD
7NCDQ9	43.7	44.0	44.0	43.7	43.9	-0.34	2.4	0.2 L	44.0	-0.03	2.9	0.4 L	16	LD
8CVT7C	43.9	44.1	44.0	42.7	43.7	-0.44	2.0	0.6	43.1	-0.52	2.8	1.3	16	TH
BDXQ7W	40.9	43.3	48.1	45.6	44.5	-0.01	3.8	3.1 H	44.1	0.01	3.5	2.2	8	LD
C48NZ8	47.5	45.2	45.9	41.7	45.1	0.30	3.1	2.5	45.1	0.51	3.0	1.6	16	LC
ED4B69	38.7 *	40.7 *	41.0	38.4 X	39.7	-2.51 *	3.7	1.3	39.7	-2.29 *	3.7	1.3	4	XX
EWF2H7	43.1	43.5	42.8	44.1	43.4	-0.58	2.1	0.6	41.9	-1.14	2.1	1.4	12	TU
FTTXQR	42.2	46.3	43.2	44.2	44.0	-0.26	3.0	1.7	43.8	-0.16	3.3	1.0	16	XX
J8H82M	45.9	46.5	48.8	46.1	46.8	1.22	3.5	1.3	46.3	1.16	3.8	1.5	16	EM
JK942Y	47.6	46.2 H	48.5	45.9	47.1	1.35	4.1	1.2	46.0	1.01	3.5	1.2	16	LD
KCRKJK	42.4 H	42.0	44.7	42.8	43.0	-0.80	3.7	1.2	43.8	-0.18	3.3	1.4	16	LD
PQZW3G	43.1	42.9	42.9	42.7	42.9	-0.85	3.1	0.2 L	43.2	-0.46	3.3	1.7	16	LD
RHXUNU	44.1	42.9	43.6	44.3	43.7	-0.40	2.8	0.7	40.7	-1.79	3.0	2.8	16	LZ
RNY4VM	45.6	44.6	45.7	45.0	45.2	0.38	2.9	0.5	43.4	-0.36	3.0	1.5	16	LD
V3NC7G	44.2	44.1 L	44.2	44.1	44.2	-0.17	1.7	0.0 L	44.2	0.07	1.6	0.1 L	16	LD
XJPXL9	43.2	44.0	43.0	42.5	43.2	-0.70	3.2	0.6	43.7	-0.19	2.8	0.8	16	LC
YQ44VK	45.8	43.7	44.1	44.5	44.5	0.02	2.5	0.9	44.7	0.32	3.3	0.8	16	LD
YT66X4	47.4	46.9	49.2	48.9 *	48.1	1.89	2.7	1.1	45.1	0.50	3.2	4.2	16	LD
YYXAPL	47.1	45.7	46.9	46.6 H	46.6	1.10	3.2	0.6	47.9	2.00 *	3.6	5.7 H	15	MB
ZAUFK7	44.7	42.4	43.0	44.9	43.7	-0.40	4.2	1.3	43.4	-0.36	3.5	1.5	16	LD

Consensus (All Labs) Results

Wk Mean	44.17	44.38	44.99	44.68	Month Mean	44.49	Grand Mean	44.11
Avg SDr	3.17	3.23	3.07	3.15	Avg SD	3.18	Avg SD	3.24
SD btwn Labs	2.43	1.83	2.28	1.79	SD btwn Labs	1.91	SD btwn Labs	1.92
Labs Incld	25	25	25	24	SD btwn Wks	1.26	SD btwn Wks	2.16
Labs Excld	1	1	1	2	Labs Incld	25	Labs Incld	25
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	TH	TMI Compression Tester, Model 17-76
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T826

	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
2EKAVC	13.5	12.6 *L	14.0	14.3	13.6	-0.71	0.9	0.7	13.7	-0.41	1.1	0.5	16	LA
2FC6HK	13.2	13.4	12.8	12.3 XL	12.9	-2.03 *	1.0	0.5	13.0	-2.19 *	1.0	0.7	12	LH
6WWXW3	13.5	13.9	13.6	13.4 L	13.6	-0.74	0.9	0.2	13.6	-0.75	0.9	0.2	4	LB
7NCDQ9	13.7	14.0	13.8	13.8	13.8	-0.29	1.1	0.1	13.8	-0.25	1.1	0.1 L	16	LB
86F8X8	14.4	14.7	15.5 *	14.7	14.8	1.74	1.1	0.5	14.4	1.49	1.1	0.4	16	LA
8TMQ97	14.2	14.5	14.0	13.9 L	14.2	0.41	0.9	0.3	13.8	-0.21	0.9	0.4	16	LH
9MRGBD	13.6	No Data	13.2	No Data	13.4	-1.05	1.0	0.2	13.4	-1.09	1.1	0.3	14	LA
BDXQ7W	13.7	14.7	13.9	14.8	14.3	0.68	1.4	0.6	14.6	1.89	1.3	0.6	8	LA
C48NZ8	14.2	14.1	13.9	13.6	13.9	-0.01	1.0	0.2	13.6	-0.74	1.0	0.3	16	LU
E6TAJ9	14.0	14.2	13.8	13.9	14.0	0.07	1.0	0.2	13.8	-0.28	1.0	0.4	16	TT
GX4C9Q	13.7	13.1	14.0	14.1 L	13.7	-0.42	0.8	0.5	13.7	-0.34	0.9	0.4	16	LB
JK942Y	12.8 *	13.1	13.7	13.9	13.4	-1.16	1.0	0.5	13.6	-0.67	1.1	0.5	16	LB
JLN4KN	13.8	13.5	14.5	13.9 L	13.9	-0.04	1.0	0.4	13.9	0.08	1.1	0.4	16	LA
JPZBJ8	13.4	13.7	13.1 H	14.3 L	13.6	-0.63	1.3	0.5	13.8	-0.27	1.2	0.7	16	LA
KHG6M2	14.0	14.4	13.3	14.9	14.2	0.44	1.0	0.7	14.4	1.37	1.1	0.6	16	LH
L6QVDZ	14.4 H	14.1	13.2	14.8	14.1	0.34	1.2	0.7	14.2	0.78	1.4	0.5	16	LA
NKFHYJ	13.9	13.6	13.2	14.2	13.7	-0.41	1.3	0.4	13.8	-0.28	1.1	0.4	16	LU
NNB96V	23.7 XH	22.5 XH	24.0 XH	23.0 X	23.3	18.66 X	1.8	0.7	16.5	6.86 X	1.3	4.1 H	16	XX
PQZW3G	14.0 L	14.2 L	13.9	13.9	14.0	0.13	0.7	0.2	14.1	0.69	1.1	0.4	16	LA
RHXUNU	14.3	15.3 *	15.1 *	14.9	14.9	1.88	1.3	0.4	13.8	-0.25	1.2	0.8	16	LA
RNY4VM	13.2	13.5	13.1	13.8	13.4	-1.04	1.1	0.3	13.4	-1.19	1.0	0.3	16	LZ
RY4QAE	13.8 L	13.8 L	13.9 L	13.9 L	13.8	-0.22	0.5	0.1 L	13.8	-0.28	0.4	0.1 L	16	LA
WFRX98	13.9	13.8	13.8	13.9 L	13.8	-0.20	0.9	0.1 L	13.7	-0.45	0.9	0.4	16	LB
XJPXL9	14.5	13.9	14.5	14.5	14.3	0.73	1.1	0.3	14.3	1.21	1.1	0.3	16	LH
YYXAPL	14.6	16.7 XH	14.8	14.7 H	15.2	2.51 *	3.0	1.0 H	14.6	1.96 *	1.8	0.9	16	LA
ZJKXYE	13.6 L	14.3	14.1 L	13.8 L	13.9	-0.02	0.6	0.3	13.9	0.19	0.6	0.3	4	LU

Consensus (All Labs) Results

Wk Mean	13.83	13.92	13.87	14.17	Month Mean	13.94	Grand Mean	13.86
Avg SDr	0.91	0.97	1.10	1.60	Avg SD	1.16	Avg SD	1.08
SD btwn Labs	0.43	0.60	0.64	0.45	SD btwn Labs	0.50	SD btwn Labs	0.38
Labs Incld	25	23	25	23	SD btwn Wks	0.45	SD btwn Wks	0.48
Labs Excld	1	2	1	2	Labs Incld	25	Labs Incld	25
Labs not Rcvd	0	1	0	1				

Key to Instrument Codes Reported by Participants

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

End of Report