Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #610 (H) - July 2020

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX14	Top to Bottom Box Compression Strength, Corrugated Boxes
202	EC12	Edgewise Compressive Strength, by T811, Corrugated Board
203	EC12	Edgewise Compressive Strength by T839, Corrugated Board
205	42F2	Bursting Strength (Mullen), 42 lb Linerboard
206	56G1	Bursting Strength (Mullen), 56 lb Linerboard
215	42F2	Ring Crush, 42 lb Linerboard
216	56G1	Ring Crush, 56 lb Linerboard
223	42F2	STFI, 42 lb Linerboard
224	56G1	STFI, 56 lb Linerboard
228	42F2	Roughness - Stylus Method, 42 lb Linerboard
229	42F2	Roughness - Sheffield Method, 42 lb Linerboard
231	42F	Internal Bond, 42 lb Linerboard
234	42F	COF Inclined Plane (Slide Angle), 42 lb Linerboard
237	42F2	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	April 2019-Current
	CM92	January 2019-March 2019
35 lb Linerboard	35E2	June 2020-Current
	35E1	February 2019-April 2020
42 lb Linerboard	42F2	February 2020-Current
	42F1	January 2019-January 2020
56 lb Linerboard	56G1	January 2020-Current
	56A2	January 2019-November 2019

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
22MUFM	574.6	-0.08	26.79		584.8	-0.09	14.42	2	LG
27JHYF	681.6	1.97 *	58.41		601.9	0.28	67.59	4	ES
363T42	504.1	-1.43	36.19		528.9	-1.32	17.42	4	LS
4Y8HAU	567.8	-0.21	25.86		575.1	-0.31	10.88	4	LS
77GL9R	615.2	0.70	37.92		609.4	0.45	27.32	3	TC
8RYB2F	555.8	-0.44	33.18		553.3	-0.79	3.54	2	XX
9B63J9	579.9	0.02	38.77		621.6	0.72	38.63	4	LO
9FE7NP	551.2	-0.52	77.65		598.4	0.21	55.26	4	ET
BUCWHT	531.0	-0.91	21.92		565.8	-0.51	49.29	2	LM
ENPGFP	541.9	-0.70	22.50		579.1	-0.22	44.59	4	LL
FQX73Y	601.6	0.44	71.87		566.1	-0.51	31.49	4	ER
FY99NZ	575.3	-0.06	51.36		547.0	-0.93	21.56	4	ER
GKJW7M	616.6	0.73	46.18		590.7	0.04	19.49	4	LL
H4EHTY	597.3	0.36	11.01		592.7	0.08	11.96	4	LM
HDG6DJ	574.0	-0.09	85.58	H	580.8	-0.18	50.62	4	LS
J23AXK	589.6	0.21	49.21		574.3	-0.32	20.45	4	ER
J4699C	544.1	-0.66	19.24		593.0	0.09	52.16	4	LG
KRBBJJ	552.8	-0.49	14.29		666.3	1.70	87.06 H	4	LS
KRWPAH	506.6	-1.38	22.77		526.5	-1.38	28.14	2	EX
KXGPLN	701.8	2.36 *	47.56		686.1	2.14 *	19.13	4	EM
L8446K	530.0	-0.93	30.61		567.7	-0.47	53.33	2	LH
LB4EZK	625.5	0.90	34.87		660.6	1.58	26.25	4	LG
QRDRJD	589.2	0.20	38.23		593.9	0.11	18.90	4	EX
VGXP8M	478.6	-1.91 *	9.07	L	481.5	-2.37 *	2.46 L	4	LL
XJVUVR	527.4	-0.98	21.89		539.5	-1.09	10.74	3	EX
YFRFL8	600.3	0.41	40.35		639.1	1.11	35.92	4	TB
YLJPV6	633.0	1.04	41.19		631.4	0.94	5.29 L	4	TE
ZX3RQ3	654.8	1.46	29.18		636.2	1.04	23.14	4	ER

Consensus (All Labs) Results

Month Mean	578.63	Grand Mean	588.99
Avg SD	41.69	Avg SD Months	36.45
SD btwn Labs	52.26	SD btwn Labs	45.35
Labs Incld	28	Labs Incld	28

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	588.90	40.43	10.27	8
Water based adhesive sealing	701.80	0.00	123.17	1
Clip sealing	568.49	50.82	10.14	18

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	TE	Testometric M500 - 25 KN
XX	Instrument make/model not specified by lab		

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
22MUFM	38.0	0.60	2.18		36.8	0.09	1.71	2	LE
2Q6CMF	38.6	0.86	2.08		35.1	-0.44	3.06	4	LD
363T42	24.9	-4.69 X	3.74	H	25.5	-3.53 X	1.00	4	EM
4Y8HAU	34.0	-1.00	2.39		34.1	-0.76	0.76	4	LD
BF8ZYQ	37.5	0.39	1.22		37.5	0.30	0.00	1	EM
FPFYWG	35.1	-0.59	2.17		36.7	0.05	1.79	3	XX
FY99NZ	35.7	-0.32	2.64		34.9	-0.53	0.74	3	EN
GFN39L	37.6	0.45	1.18		42.3	1.86 *	3.65	4	XX
GTWQLP	40.6	1.64	1.73		41.2	1.48	0.85	4	LC
GV2E2E	35.4	-0.45	0.52	L	33.7	-0.90	2.63	4	TF
HDG6DJ	39.2	1.10	1.51		39.1	0.82	0.38	4	LC
XJVUVR	34.4	-0.86	2.08		35.4	-0.37	0.92	3	LC
XYNLE8	32.1	-1.80	1.91		31.5	-1.61	2.25	4	TX

Consensus (All Labs) Results

Month Mean	36.51	Grand Mean	36.52
Avg SD	1.89	Avg SD Months	1.99
SD btwn Labs	2.47	SD btwn Labs	3.13
Labs Incld	12	Labs Incld	12

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
TX	TMI (model not specified)	XX	Instrument make/model not specified by lab

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
22MUFM	39.5	0.16	2.76		39.0	-0.16	0.69	2	LY
27JHYF	41.7	1.44	1.42		40.9	0.82	0.99	4	LD
2Q6CMF	36.9	-1.37	1.27		38.3	-0.54	1.66	4	LD
2WNK3Z	38.3	-0.55	2.97		38.2	-0.58	1.68	4	XX
363T42	38.4	-0.53	1.35		38.7	-0.33	0.54	4	EM
4DRZ2X	35.9	-1.99 *	2.87		34.7	-2.41 *	2.27	4	XX
4Y8HAU	40.3	0.62	1.67		40.9	0.79	1.11	4	LD
6TVU9X	43.6	2.57 *	2.32		42.9	1.87	0.65	4	LD
8ZAE7U	37.7	-0.89	0.98		36.2	-1.64	1.55	4	LC
9B63J9	39.1	-0.08	1.42		38.6	-0.41	0.79	4	LD
9FE7NP	39.9	0.39	0.98		40.7	0.70	1.63	4	TD
BUCWHT	37.4	-1.08	1.36		36.7	-1.39	1.04	2	TG
BXETA9	37.9	-0.82	2.55		37.3	-1.07	1.94	4	LC
ENPGFP	40.6	0.78	0.87		41.2	0.96	1.67	4	BU
FQX73Y	40.1	0.50	2.28		40.0	0.36	0.81	4	LD
FY99NZ	38.4	-0.49	2.05		36.4	-1.54	1.78	3	EN
GFN39L	40.3	0.63	1.08		42.5	1.64	1.79	4	XX
GTWQLP	41.2	1.12	1.40		40.7	0.71	0.91	4	LC
GV2E2E	38.8	-0.27	0.79 L		37.6	-0.93	1.14	4	TD
H4EHTY	39.7	0.25	0.83 L		40.1	0.38	0.34	4	EM
HDG6DJ	40.5	0.72	2.18		40.8	0.78	0.77	4	LC
HDZQAF	41.4	1.29	1.34		40.5	0.62	2.32	3	EM
J23AXK	39.1	-0.09	1.93		41.1	0.94	1.89	4	LD
J4699C	42.1	1.67	1.21		40.0	0.36	1.39	4	TJ
J8TK8H	35.4	-2.29 *	4.01 H		35.7	-1.89	1.15	4	TD
KCX3JF	40.9	0.99	2.45		40.1	0.39	0.65	4	TG
KRBBJJ	37.9	-0.79	2.18		41.4	1.06	2.54	4	TB
KRWPAH	37.8	-0.84	1.70		39.1	-0.14	1.76	2	CT
KXGPLN	38.2	-0.61	3.19 H		38.4	-0.47	0.21 L	4	TH
L8446K	37.6	-0.96	1.35		38.5	-0.45	1.85	4	EM
LB4EZK	39.4	0.11	1.06		40.7	0.70	1.18	4	EM
MQCMFE	38.1	-0.67	1.43		38.9	-0.23	0.77	4	TK
QRDRJD	39.2	-0.03	2.76		41.2	0.95	1.49	4	LD
VGXP8M	37.8	-0.87	1.91		37.0	-1.21	1.15	4	LC
XJVUVR	38.3	-0.57	1.47		38.5	-0.46	0.59	3	LC
XYNLE8	39.3	0.02	0.90		38.8	-0.29	2.04	4	TX
YFRFL8	40.4	0.65	0.87		40.7	0.68	0.55	4	LD
YLJPV6	41.5	1.35	1.67		41.7	1.23	1.29	4	LD
Z4VQ6X	39.4	0.08	1.30		40.2	0.45	1.67	4	TD

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
ZX3RQ3	40.0	0.46	1.22	39.6	0.15	0.72	4	EM

Consensus (All Labs) Results

Month Mean	39.25	Grand Mean	39.34
Avg SD	1.89	Avg SD Months	1.41
SD btwn Labs	1.70	SD btwn Labs	1.92
Labs Incld	40	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	TX	TMI (model not specified)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42F2

TAPPI Official Test Method T807

Report #610 (H)
July 2020

	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
22MUFM	115.5	117.1	116.9	116.9	116.6	1.75	6.5	0.7	115.1	1.47	7.0	2.0	8	AH
27JHYF	102.5	106.2 H	106.8	111.3	106.7	-0.97	10.6	3.6	106.7	-1.06	9.5	4.0	16	LA
2DDUP3	110.6	108.0	110.0	111.7	110.1	-0.04	6.7	1.6	110.0	-0.06	6.7	1.1	16	AH
2GEQGH	112.6	114.8	115.3	118.9	115.4	1.43	8.1	2.6	113.0	0.85	11.7	3.9	16	TB
2Q6CMF	107.8	109.8	105.9	105.6	107.3	-0.81	5.7	1.9	107.0	-0.95	6.8	2.9	16	LA
37DNRE	101.8	102.6	106.9 H	114.5	106.5	-1.04	12.6	5.8 H	104.9	-1.59	9.1	6.4 H	16	LB
3W3L7D	105.5	107.3	119.3 *L	No Data	110.7	0.13	6.7	7.5 H	114.3	1.22	9.3	6.6 H	7	TB
4PHKNF_AL	110.4	115.4	110.5	114.4	112.7	0.67	6.9	2.6	113.2	0.91	7.9	3.1	16	AL
4Y8HAU	104.2	105.0	105.0	106.2	105.1	-1.41	10.3	0.8	105.3	-1.47	9.3	2.1	16	LA
6BWRDE	105.6	103.9	105.0	105.5	105.0	-1.44	8.2	0.8	105.5	-1.40	7.8	1.7	16	LC
6TVU9X_AL	116.4	117.7 *	117.8	122.3 *	118.6	2.29 *	8.3	2.6	117.0	2.04 *	6.6	2.3	16	AK
6TXF6D	108.5	110.6	111.0	112.9	110.7	0.14	9.2	1.8	109.8	-0.13	9.1	2.9	16	LZ
74WRDC	105.0	104.7	101.7 *	106.6	104.5	-1.57	8.2	2.0	104.5	-1.71	8.2	2.0	4	LZ
7VKH6X_AL	116.3	105.7	110.9	114.6	111.9	0.46	8.1	4.7	114.4	1.25	9.6	3.9	13	AL
8F48RU	113.7	109.4	112.4	111.1	111.7	0.40	8.1	1.9	112.2	0.60	8.5	3.4	16	LA
9J3HMU	112.3	109.5	107.2	108.7	109.4	-0.23	10.7	2.1	110.5	0.10	9.5	3.0	16	LJ
A848RT_AL	118.7 *	117.6	117.3	118.4	118.0	2.14 *	9.0	0.7	113.9	1.10	10.2	3.8	16	AL
AWH3KT_AL	112.9	106.2	115.9	110.4	111.3	0.31	10.1	4.1	109.1	-0.33	8.8	3.0	15	AL
B7NHN8	105.2	107.4	108.2	111.0	108.0	-0.63	8.1	2.4	109.4	-0.24	8.2	3.5	16	AH
B7NHN8_AL	112.7	108.1	112.7	111.4	111.2	0.27	8.8	2.2	111.8	0.47	9.4	2.4	9	AL
BMTP39	104.3 H	107.0	103.7	108.9	106.0	-1.17	11.2	2.4	109.8	-0.13	9.7	3.7	16	LC
BXETA9_AL	115.2	110.7	109.4	108.7	111.0	0.22	9.9	2.9	111.9	0.50	9.2	1.9	14	AL
D2K8NP	105.5	107.7	112.1	106.4	107.9	-0.64	7.6	2.9	105.9	-1.30	8.8	2.5	12	LJ
D2MTJ6	113.2	116.4	113.9	114.3	114.5	1.16	9.0	1.4	113.4	0.97	9.7	3.3	16	LA
DNBRGJ	112.3	113.1	111.1	112.7	112.3	0.57	6.5	0.9	113.4	0.94	6.0	1.1	16	LA
DT9AZ6	109.2	109.4	111.4	109.0	109.8	-0.13	8.8	1.1	111.0	0.23	9.7	2.2	16	AH
DT9AZ6_AL	107.9	108.5	112.5	110.4	109.8	-0.11	5.9	2.1	99.2	-3.28 X	5.7	9.8 H	16	AL
DWPGFR	112.1 H	110.2	113.0	108.3	110.9	0.18	10.6	2.1	110.8	0.19	9.5	3.3	16	LC
DWPGFR_AL	103.1	110.6	98.9 *H	105.5	104.5	-1.56	18.4	4.9	110.5	0.10	12.7	5.2	16	AL
FQX73Y	112.0	114.8	110.1	113.4	112.6	0.65	7.6	2.0	111.7	0.44	8.6	3.2	16	AH
FT6BWM	110.6	110.1 L	105.8	110.4 L	109.2	-0.28	3.5	2.3	109.5	-0.21	4.5	1.2	16	LA
FXEJ66_AL	110.4	110.4	106.6	111.2	109.7	-0.16	7.4	2.1	107.9	-0.70	11.0	2.5	16	AL
GFN39L	114.6 L	113.8 L	115.7 L	116.0	115.0	1.31	3.7	1.0	114.7	1.36	4.2	1.4	16	LC
GV2E2E	114.7 H	106.6	114.9	116.7	113.2	0.82	11.4	4.5	112.8	0.79	10.5	3.6	16	XX
HDG6DJ	116.5	116.3	111.9 L	112.2	114.2	1.10	7.0	2.5	108.0	-0.67	8.0	4.8	16	AH

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42F2

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
J23AXK	105.4	106.3	106.7	104.9	105.8	-1.21	10.4	0.8	108.7	-0.46	9.3	2.9	16	LZ
J49VM6	108.0	103.6	104.5	102.0 *	104.5	-1.57	5.8	2.5	103.5	-2.02 *	6.5	2.8	6	AC
JJHJXK	108.1	107.3	109.5	109.0	108.5	-0.48	9.0	1.0	109.4	-0.24	6.9	1.8	16	TP
JKTLKJ	108.4	108.6	108.6	108.7	108.6	-0.46	6.5	0.1 L	108.4	-0.53	6.8	0.3 L	16	LJ
JVEHUX	121.6 *	118.2 *	118.4	114.0	118.1	2.15 *	7.7	3.1	117.6	2.21 *	9.7	2.7	16	AH
KRWPAH	110.5	113.5	113.0	104.5	110.4	0.04	8.8	4.1	111.1	0.26	9.7	3.8	8	XX
LWYD3A	104.4	111.8	106.3	99.0 *	105.4	-1.33	8.9	5.3	105.1	-1.52	8.7	4.0	16	LA
LYMP2F	105.5 L	108.8	108.7 L	108.5	107.9	-0.65	3.9	1.6	108.9	-0.39	4.2	1.5	16	LA
MKQQVX_AI	107.0	108.3	107.0	109.2	107.9	-0.64	6.1	1.1	109.0	-0.35	6.0	2.0	16	AL
N27N89	111.6	114.4	No Data	No Data	113.0	0.76	9.2	2.0	114.6	1.33	9.3	2.0	6	LC
PTP8DE	117.7	115.3	111.6	110.9	113.9	1.00	8.8	3.2	113.3	0.93	8.9	2.4	16	LC
PYZDXQ	99.8 *L	104.3	107.7	108.2	105.0	-1.44	7.4	3.9	104.5	-1.70	7.8	2.9	12	LC
QM223P	106.5	111.3	111.2	111.5	110.1	-0.02	6.5	2.4	111.2	0.29	7.5	2.1	16	LA
QM223P_AL	108.6	111.0	109.9	107.3	109.2	-0.28	5.6	1.6	111.1	0.28	10.0	3.6	16	AL
QRDRJD	108.0	105.0	105.2	111.0	107.3	-0.80	11.3	2.8	111.0	0.24	9.6	3.7	16	AH
RRP2TP_AL	110.7	109.5	110.7	109.7	110.1	-0.03	6.5	0.7	108.5	-0.50	5.9	2.5	16	AL
TQA42P_AL	110.6	109.3	114.7	114.1	112.2	0.54	7.8	2.6	111.1	0.27	7.4	2.4	16	AL
W47EXM	103.0	110.6	110.7	105.9	107.6	-0.73	8.5	3.8	106.0	-1.27	9.3	2.7	16	LC
X4J9EM	109.2	109.6	108.0	109.5	109.1	-0.32	6.7	0.7	109.3	-0.26	8.6	1.5	16	LA
XK7NHJ_AL	112.0	111.9	111.7	112.2	112.0	0.48	5.8	0.2 L	107.0	-0.95	8.1	4.4	16	AL
XR6H86	109.4	107.0	111.5	105.1	108.3	-0.54	11.4	2.8	108.2	-0.59	9.9	2.3	16	LA
ZFLN7V_AL	111.7	123.3 X	113.9	116.7	116.4	1.70	7.2	5.0	114.8	1.36	8.7	4.3	16	AK

Consensus (All Labs) Results

Wk Mean	109.78	109.97	110.31	110.51	Month Mean	110.22	Grand Mean	110.20
Avg SDr	8.15	8.31	9.29	8.52	Avg SD	8.57	Avg SD	8.64
SD btwn Labs	4.61	3.96	4.27	4.37	SD btwn Labs	3.64	SD btwn Labs	3.34
Labs Incld	57	56	56	55	SD btwn Wks	2.85	SD btwn Wks	3.15
Labs Excld	0	1	0	0	Labs Incld	57	Labs Incld	56
Labs not Rcvd	0	0	1	2				

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
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
22MUFM	119.8	119.2	119.4	121.1	119.9	1.33	7.1	0.9	120.3	1.66	7.8	1.7	7	AH
27JHYF	106.0	110.7	115.1	109.3	110.3	-1.34	9.7	3.8	111.9	-0.83	10.0	3.6	12	LA
2DDUP3	112.6	114.4	113.9	115.7	114.2	-0.27	9.2	1.3	113.3	-0.40	7.8	1.5	12	AH
2GEQGH	114.7 L	113.2	113.9	117.1	114.7	-0.11	9.8	1.7	116.7	0.60	9.4	2.7	12	TB
2Q6CMF	106.1	116.1	117.0	112.7	113.0	-0.59	6.9	4.9	112.1	-0.75	7.9	4.1	12	LA
37DNRE	108.7	111.2	105.3 *	120.7	111.5	-1.01	9.3	6.6	112.1	-0.77	9.6	6.0	12	LB
3W3L7D	109.5	No Data	123.4	No Data	116.5	0.37	12.1	9.8	116.4	0.51	10.0	6.5	5	TB
4PHKNF_AL	120.7	123.1	116.9	113.0	118.4	0.91	7.5	4.4	117.6	0.88	7.5	2.8	12	AL
4Y8HAU	112.5	109.5	114.9	112.6	112.4	-0.76	7.5	2.2	112.1	-0.75	9.6	2.2	12	LA
6BWRDE	104.6 *	113.6	108.6	115.5	110.6	-1.26	8.5	4.9	110.8	-1.15	9.0	3.1	12	LA
6TVU9X_AL	120.9	122.3	121.5	126.6 *	122.8	2.15 *	9.1	2.6	121.9	2.15 *	9.0	2.8	12	AL
6TXF6D	119.7 H	113.5	111.6	114.5	114.8	-0.08	12.2	3.4	115.4	0.21	11.6	3.3	12	LZ
74WRDC	111.8	106.5	105.9 *	101.9 X	106.5	-2.39 *	8.5	4.1	106.5	-2.42 *	8.5	4.1	4	LZ
7VKH6X_AL	117.0	116.2	113.6	122.6	117.4	0.63	8.8	3.8	115.9	0.38	10.5	3.6	7	XX
8F48RU	97.1 X	114.4	123.9	122.7	114.5	-0.16	10.3	12.4 H	116.7	0.60	11.2	7.5 H	12	LA
9J3HMU	115.0	114.4	110.7	117.9	114.5	-0.17	11.0	3.0	114.6	-0.02	10.7	2.9	12	LZ
A848RT_AL	123.6	117.9	114.0	123.4	119.7	1.28	9.1	4.6	117.0	0.68	12.6	5.2	12	AL
AWH3KT_AL	121.5	120.6	118.8	120.1	120.2	1.42	10.3	1.1	118.3	1.09	10.3	2.9	8	AL
B7NHN8	106.0	111.0	123.0	114.4	113.6	-0.42	10.3	7.2	114.3	-0.11	10.2	6.1	8	AH
B7NHN8_AL	116.6	112.5	114.9	116.0	115.0	-0.03	10.8	1.8	115.1	0.12	10.7	1.6	5	AL
BMTP39	117.6	110.5	113.4	115.3	114.2	-0.25	10.4	3.0	111.9	-0.82	10.5	3.7	12	LC
BXETA9_AL	110.3	109.5	118.2	120.9	114.7	-0.10	10.8	5.7	116.0	0.38	14.5	4.3	12	AL
D2K8NP	117.5	108.8	118.7	113.9	114.7	-0.10	8.4	4.5	109.7	-1.46	10.5	6.7	8	LJ
D2MTJ6	118.3	126.5 *	118.8	117.9	120.4	1.47	10.4	4.1	118.2	1.04	11.7	3.3	12	LA
DNBRGJ	116.9	115.3 L	116.2 L	116.7	116.3	0.32	5.3	0.7	116.4	0.52	5.7	0.7 L	12	LA
DT9AZ6	116.6	115.6	113.4	118.4	116.0	0.25	8.2	2.1	114.9	0.06	9.6	2.7	12	AH
DT9AZ6_AL	113.9	114.8	115.7	111.8	114.0	-0.30	5.6	1.7	98.4	-4.83 X	6.9	14.1 H	12	AL
DWPGFR	117.2	114.5	120.7	114.2	116.6	0.43	8.6	3.0	116.5	0.54	10.5	2.8	10	LC
DWPGFR_AL	116.4	115.2	119.4	116.3	116.8	0.48	11.5	1.8	116.4	0.50	12.4	2.0	8	AL
FQX73Y	115.2	117.5	121.9	119.9	118.6	0.98	11.1	2.9	116.7	0.59	10.0	3.0	12	AH
FT6BWM	114.1 L	115.0	114.6	114.2	114.5	-0.18	7.0	0.4 L	114.4	-0.08	5.9	0.3 L	12	LA
FXEJ66_AL	118.6	110.6	109.0	121.0	114.8	-0.09	7.8	5.9	115.1	0.14	9.5	3.5	12	XX
GV2E2E	117.3	121.8 H	120.6	123.8	120.9	1.60	12.8	2.7	118.5	1.14	11.6	2.6	12	XX
HDG6DJ	117.6	114.7	111.9	114.6 L	114.7	-0.11	8.0	2.3	110.5	-1.24	9.2	4.1	12	AH
J23AXK	114.2	109.1	113.6	107.3 *	111.0	-1.13	11.0	3.4	112.0	-0.81	11.0	2.9	12	LZ

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
J49VM6	106.6	105.1 *	106.5 *	108.0	106.6	-2.38 *	8.9	1.2	106.6	-2.41 *	8.9	1.2	4	AC
JJHJXK	117.2	112.5	115.0	110.7	113.9	-0.35	6.8	2.8	113.3	-0.40	7.4	2.1	12	TP
JKTLKJ	113.0	112.9	112.9	112.8	112.9	-0.62	6.9	0.1 L	112.7	-0.57	7.3	0.2 L	8	LJ
JVEHUX	119.8	116.4	122.8	119.2	119.6	1.23	10.5	2.6	120.0	1.59	9.6	2.7	12	AH
KRWPAH	107.5	113.5	117.0	109.5 H	111.9	-0.90	11.3	4.2	111.7	-0.88	12.0	3.2	8	XX
LWYD3A	111.7	107.5	113.1	109.9	110.5	-1.27	8.3	2.4	110.4	-1.27	8.2	2.7	12	LA
LYMP2F	122.5	122.8 L	120.5 L	122.1 L	122.0	1.91	4.0	1.0	122.6	2.37 *	3.7	1.2	12	LA
MKQQVX_AI	112.7	111.4	115.8	116.5	114.1	-0.27	7.3	2.5	114.5	-0.04	8.5	1.7	12	AL
N27N89	118.5	119.1	No Data	No Data	118.8	1.03	9.8	0.4	118.7	1.19	10.9	4.3	5	LC
PTP8DE	117.1	114.6	119.3	119.4	117.6	0.70	11.4	2.3	117.0	0.69	10.2	3.4	12	LC
PYZDXQ	107.0	99.8 X	113.7	113.0	108.4	-1.87	8.8	6.4	108.2	-1.92	10.1	4.7	12	LC
QM223P	118.8	114.7	115.0	116.4	116.2	0.31	9.6	1.9	115.2	0.17	8.5	3.0	12	LA
QM223P_AL	116.9	116.4	117.3	114.2	116.2	0.31	9.4	1.4	116.4	0.53	7.9	2.4	12	AL
QRDRJD	109.0	105.8 *	112.2	112.2	109.8	-1.48	10.8	3.1	112.1	-0.77	10.2	2.8	12	AH
RRP2TP_AL	117.2 L	117.4	115.2	115.1	116.2	0.31	4.9	1.2	116.0	0.41	6.5	1.9	12	AL
TQA42P_AL	111.0	111.9	111.8	113.6	112.1	-0.84	7.6	1.1	113.7	-0.30	13.2	3.9	12	AL
W47EXM	115.6	116.3	113.2	110.5	113.9	-0.33	11.3	2.6	113.6	-0.32	10.3	1.9	12	LC
X4J9EM	112.6	114.5	115.8	114.0	114.2	-0.25	10.3	1.3	114.1	-0.17	9.9	2.1	12	LA
XK7NHJ_AL	111.4	119.8	118.5	114.5	116.0	0.26	10.3	3.8	113.9	-0.24	8.7	2.9	12	AL
XR6H86	117.2	115.2	119.5	112.3	116.1	0.26	12.5	3.1	112.8	-0.54	11.9	3.2	12	LA
ZFLN7V_AL	119.1 H	118.1	122.5	121.9	120.4	1.47	11.2	2.1	117.1	0.72	10.9	6.5	12	AK

Consensus (All Labs) Results

Wk Mean	114.75	114.55	115.82	116.00	Month Mean	115.11	Grand Mean	114.67
Avg SDr	9.20	9.30	9.89	9.19	Avg SD	9.43	Avg SD	9.85
SD btwn Labs	4.69	4.47	4.41	4.40	SD btwn Labs	3.60	SD btwn Labs	3.37
Labs Incld	55	54	55	53	SD btwn Wks	3.86	SD btwn Wks	3.55
Labs Excld	1	1	0	1	Labs Incld	56	Labs Incld	55
Labs not Rcvd	0	1	1	2				

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
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

	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
22MUFM	88.8	88.4	89.5	87.3	88.5	-0.50	3.2	0.9	88.6	-0.55	3.0	1.0	8	LG
2GEQGH	89.6	90.6	88.9	90.4	89.9	-0.14	3.3	0.8	91.5	0.27	3.8	1.9	15	LD
2Q6CMF	89.7	87.7	89.0	90.7 L	89.2	-0.31	1.8	1.3	89.2	-0.37	2.2	1.6	16	LD
37DNRE	100.9 *	100.2 *	97.9	100.9 *	100.0	2.44 *	3.7	1.4	98.5	2.24 *	3.8	3.4	16	LC
3W3L7D	90.7	91.9	96.6	92.2	92.9	0.62	4.2	2.6	93.0	0.68	4.1	3.9	8	LX
4PHKNF	92.1	90.5	89.9	88.7	90.3	-0.04	3.9	1.4	90.7	0.04	3.6	1.4	12	LC
4Y8HAU	92.6	89.7	91.3	91.1	91.2	0.19	2.7	1.2	90.9	0.09	2.5	1.5	16	LD
6BWRDE	88.6	88.1	88.8	89.9	88.8	-0.41	2.9	0.7	90.1	-0.11	2.8	1.6	16	LD
6TVU9X	95.6	93.7	93.9 L	95.5	94.7	1.09	2.5	1.1	94.2	1.02	3.3	2.3	16	LD
6TXF6D	87.1	84.8	89.0	84.0	86.2	-1.08	3.1	2.3	88.3	-0.63	2.9	2.6	16	LC
7VKH6X	90.4	87.3	92.1	90.3	90.0	-0.10	3.2	2.0	91.3	0.21	3.1	1.9	16	LD
8F48RU	97.7	95.8	93.4	94.4	95.3	1.25	3.4	1.8	97.7	2.02 *	3.3	3.2	16	LD
9RPUH8	99.9	98.7 *	98.6 *	97.2	98.6	2.09 *	3.5	1.1	97.1	1.84	3.3	2.0	16	TU
AE4LFF	82.7	86.4	87.5	87.5	86.0	-1.14	2.8	2.3	87.2	-0.93	2.7	3.2	16	LZ
BXETA9	79.4 *H	81.5 *H	84.7	84.4	82.5	-2.03 *	5.8	2.5	86.2	-1.22	4.6	3.1	16	LC
D2K8NP	91.0	90.5	90.4	92.0	91.0	0.14	2.0	0.8	92.0	0.42	2.8	1.5	12	LD
D2MTJ6	94.7	97.6	96.2	95.5	96.0	1.42	2.7	1.2	95.8	1.47	3.1	1.4	16	LZ
DNBRGJ	91.4	91.6	91.6	93.2	92.0	0.39	2.8	0.8	92.3	0.49	3.2	0.7	16	LD
DWPGFR	93.1	92.8	91.2	92.0	92.3	0.47	3.4	0.8	91.9	0.38	2.9	1.5	16	LD
F6TAMP	74.5 XH	73.1 X	74.3 XL	74.1 X	74.0	-4.21 X	3.6	0.6	74.8	-4.40 X	3.2	2.4	16	EM
FQX73Y	86.8	88.7	84.7 L	86.9	86.8	-0.94	2.8	1.6	87.3	-0.90	2.6	1.9	16	LD
FT6BWM	90.3	90.4	93.4 L	92.6	91.7	0.31	1.8	1.5	91.4	0.23	1.9	1.6	16	LZ
FXEJ66	88.9	88.3	89.9	91.6	89.7	-0.20	2.8	1.4	88.5	-0.58	3.1	1.4	16	LD
FY99NZ	82.6	84.4	85.7	85.0	84.4	-1.54	2.8	1.3	83.7	-1.91	2.6	1.8	16	EN
GTWQLP	86.3	86.3	87.7	86.5	86.7	-0.95	3.3	0.7	87.6	-0.82	3.1	1.1	16	LC
GY4CC8	90.3 L	89.6 L	90.0 L	89.9 L	90.0	-0.12	1.0	0.3 L	91.8	0.34	2.4	2.0	16	RS
HDG6DJ	93.0	95.7	94.5	95.4	94.6	1.07	2.9	1.2	92.1	0.44	2.6	2.7	16	LC
HDZQAF	87.7 L	89.7	89.5	93.2	90.0	-0.11	2.6	2.3	90.6	0.02	2.8	1.5	12	EM
J23AXK	93.0	93.4	91.7	91.8	92.5	0.52	3.4	0.8	91.3	0.22	2.9	2.0	16	LD
JJHJXK	91.2	91.8	91.1	90.7	91.2	0.19	3.3	0.5	91.1	0.16	3.5	1.0	16	TJ
JKTLKJ	93.4	93.9	93.7	93.5	93.7	0.82	2.7	0.2 L	93.0	0.70	2.5	0.8	16	LD
KCHC2W	89.2	90.7	90.1	87.7	89.4	-0.26	2.7	1.3	87.3	-0.90	2.7	2.6	16	LC
KCX3JF	92.2	92.4	95.1	95.5	93.8	0.86	3.1	1.7	94.1	0.99	2.8	1.4	16	TH
LYMP2F	82.0	83.5	82.9 *L	82.9	82.8	-1.94 *	1.7	0.6	83.2	-2.06 *	1.7	0.6	16	TU
MKQQVX	88.9	96.7	93.7 H	93.4 H	93.1	0.69	6.1	3.2	91.3	0.21	4.9	3.8	16	LZ

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42F2

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
MQCMFE	86.9 L	86.1 L	86.3 L	86.3	86.4	-1.03	1.4	0.3	86.8	-1.06	1.4	0.7	16	MB
N27N89	95.0	91.7 H	95.0	92.6	93.5	0.80	3.6	1.7	94.6	1.15	3.7	3.0	12	MB
N4UZ8E	89.4	88.1	85.7	83.8	86.7	-0.95	3.3	2.5	85.9	-1.30	4.0	2.0	12	LD
PNCGWQ	88.3	89.5	88.2	88.1	88.5	-0.49	2.9	0.6	88.3	-0.63	3.1	2.0	16	LD
PTP8DE	94.4	93.1	91.5	93.7	93.2	0.70	2.7	1.2	93.3	0.77	2.8	1.6	16	LD
PYZDXQ	92.0 H	93.5	93.3	95.1	93.5	0.77	4.1	1.3	93.2	0.75	4.1	2.2	12	LD
QJY9ZD	86.7	87.0	86.4	86.2	86.6	-0.99	2.8	0.4	90.6	0.03	2.7	2.8	16	LZ
QM223P	88.5	89.2	88.2	87.9	88.5	-0.51	2.4	0.5	88.5	-0.56	3.4	1.8	16	LD
UMQBGB	90.8	88.4	91.2	89.1	89.9	-0.15	2.7	1.4	88.8	-0.49	3.1	2.4	16	EN
W47EXM	88.4	88.5	87.7	86.7	87.8	-0.67	3.2	0.8	87.3	-0.90	2.8	1.3	16	LD
X9GRFL	85.6	83.3	83.1	84.9	84.2	-1.59	3.5	1.2	85.6	-1.39	3.3	2.8	16	EX
XK7NHJ	101.6 *	98.2	98.6 *H	95.7 H	98.5	2.07 *	5.2	2.4	98.2	2.15 *	5.7	3.5	16	LC
XR6H86	102.9 *	103.3 X	103.0 X	102.4 X	102.9	3.19 X	2.6	0.4	102.3	3.28 X	2.9	0.8	16	LD
Y4YYW7	85.9	87.1	83.5	85.7	85.6	-1.25	3.6	1.5	85.9	-1.29	3.7	1.0	16	LD
YLJPV6	94.3 L	91.8 L	94.1	91.7	93.0	0.65	1.6	1.4	93.2	0.73	1.8	0.9	16	LD
YPDJT7	83.2 H	96.6	96.4	85.5 H	90.4	0.00	5.8	7.1 H	87.7	-0.78	6.2	6.6 H	12	MB
ZFNALN	90.8	90.4	89.8	88.9	90.0	-0.11	3.5	0.8	91.7	0.34	2.6	2.2	16	LD

Consensus (All Labs) Results

Wk Mean	90.52	90.51	90.66	90.31	Month Mean	90.44	Grand Mean	90.54
Avg SDr	3.39	2.96	3.41	3.38	Avg SD	3.29	Avg SD	3.27
SD btwn Labs	4.86	4.16	3.99	4.03	SD btwn Labs	3.91	SD btwn Labs	3.57
Labs Incld	51	50	50	50	SD btwn Wks	1.77	SD btwn Wks	2.33
Labs Excld	1	2	2	2	Labs Incld	50	Labs Incld	49
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LG	L&W 753
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 #610 (H)
July 2020

	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
22MUFM	130.3	132.7	130.2	131.0	131.0	-0.73	4.0	1.2	131.1	-0.66	3.6	2.2	7	LY
2GEQGH	143.4	138.5	134.0	139.5	138.9	0.88	4.7	3.9	138.7	0.78	4.3	3.8	9	LD
2Q6CMF	131.5	134.6	130.8	137.1 L	133.5	-0.22	2.5	2.9	134.2	-0.07	2.9	2.2	12	LD
37DNRE	144.6	148.5 *	138.9	147.5 *	144.9	2.12 *	4.8	4.3	141.8	1.36	4.7	4.4	12	LC
3W3L7D	137.5	137.4	138.6	141.7	138.8	0.87	4.4	2.0	141.0	1.22	4.4	3.8	6	LY
4PHKNF	131.6	131.2	133.5	132.8	132.3	-0.47	3.6	1.1	132.6	-0.37	3.6	2.2	8	LC
4Y8HAU	132.9	133.7	134.8	134.4	133.9	-0.13	3.6	0.8	134.1	-0.10	3.7	1.2	12	LD
6BWRDE	132.6 L	133.8	132.4	132.4	132.8	-0.36	3.7	0.7	133.0	-0.30	3.5	1.7	12	LD
6TVU9X	139.4	135.8	135.3	136.8	136.8	0.46	3.6	1.8	137.1	0.47	3.0	1.3	10	LD
6TXF6D	130.8	129.2	129.5	120.5 *	127.5	-1.46	4.5	4.7	129.4	-0.97	4.5	3.6	12	LC
7VKH6X	130.5	135.7	134.4	131.3	133.0	-0.33	4.2	2.5	136.1	0.29	4.1	3.2	12	LD
8F48RU	145.5	144.5	144.8	143.9	144.7	2.08 *	3.4	0.7	142.5	1.50	3.8	2.4	12	LD
9RPUH8	142.7	139.0	139.1	139.4	140.1	1.13	3.7	1.8	134.1	-0.10	9.3	7.3 H	12	TU
AE4LFF	130.4	132.4	130.2	135.9	132.2	-0.49	3.9	2.6	135.5	0.17	3.3	8.7 H	12	LZ
BXETA9	122.8 H	128.8 H	124.1 H	125.6 H	125.3	-1.90	9.8	2.6	122.7	-2.23 *	8.2	8.7 H	12	LC
D2K8NP	136.1	138.2	134.7	134.3	135.8	0.25	4.7	1.8	134.3	-0.05	4.4	2.2	8	LD
D2MTJ6	137.9	141.3	137.7	138.1	138.7	0.86	4.5	1.7	137.9	0.63	4.4	1.9	12	LZ
DNBRGJ	142.0	142.9	142.2	143.1	142.6	1.64	3.8	0.5	142.9	1.57	3.7	0.7 L	12	LD
DWPGFR	137.9	137.7	135.7	134.8	136.5	0.40	3.6	1.5	134.8	0.04	3.5	2.1	12	LD
F6TAMP	115.3 X	115.4 X	112.4 X	111.7 X	113.7	-4.30 X	5.2	1.9	112.5	-4.16 X	4.9	1.8	12	EM
FQX73Y	127.3	128.8	122.2 *L	125.3	125.9	-1.78	3.1	2.8	128.4	-1.17	3.7	2.7	12	LD
FT6BWM	134.9 L	135.4 L	138.7 L	134.9	136.0	0.29	3.2	1.8	137.0	0.45	3.7	2.0	12	LZ
FXEJ66	134.0	133.6	134.3	135.2	134.3	-0.06	4.6	0.7	131.3	-0.61	4.4	3.5	12	LD
FY99NZ	123.7	121.6 *	127.4	126.8	124.9	-2.00 *	3.6	2.7	123.5	-2.09 *	3.3	2.1	12	EN
GTWQLP	130.6	130.4	130.3	132.6	131.0	-0.74	3.9	1.1	132.1	-0.46	3.3	1.7	12	LC
GY4CC8	138.9 L	139.6 L	139.5 L	140.3 L	139.6	1.03	1.2	0.6	138.5	0.74	1.9	1.3	12	RS
HDG6DJ	140.1	136.2	138.1	134.6	137.3	0.55	4.0	2.4	135.1	0.10	3.4	2.8	12	LC
HDZQAF	128.1 L	128.6	130.3	133.2	130.1	-0.93	3.0	2.3	129.2	-1.01	3.2	2.0	8	EM
J23AXK	135.1	137.7	134.1	132.4	134.8	0.05	5.2	2.2	134.7	0.03	4.6	2.0	12	LD
JJHJXK	137.5	133.3	134.3	135.3	135.1	0.11	4.3	1.8	136.6	0.37	4.6	2.8	12	TJ
JKTLKJ	141.2	141.8	141.4	141.4	141.5	1.42	3.7	0.3 L	141.3	1.27	4.3	0.3 L	8	LD
KCHC2W	135.0	131.8	131.7	135.7	133.6	-0.21	4.5	2.1	130.3	-0.81	4.3	4.6	12	LC
KCX3JF	134.2	132.6	134.8	133.4	133.8	-0.17	4.3	0.9	135.7	0.21	4.2	3.0	12	TH
LYMP2F	118.1 *L	118.5 *L	119.2 *	119.1 *L	118.7	-3.26 X	1.8	0.5	122.8	-2.22 *	2.2	3.6	12	TU
MKQQVX	133.6	137.2	139.0	136.9	136.6	0.43	5.5	2.2	137.2	0.50	5.5	3.7	12	LZ

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
MQCMFE	135.2 L	135.9 L	135.9 L	135.8 L	135.7	0.23	1.6	0.3 L	134.8	0.05	1.3	1.7	12	MB
N27N89	141.2	135.2	142.0	141.9	140.1	1.13	4.8	3.2	139.6	0.95	4.8	3.8	10	MB
N4UZ8E	134.3	131.1	122.2 *	128.6	129.0	-1.14	5.4	5.1 H	129.0	-1.04	5.4	5.1	4	LD
PNCGWQ	131.2	135.9	135.4	130.6	133.3	-0.27	4.4	2.8	130.9	-0.69	3.6	3.4	12	LD
PTP8DE	137.3	136.3	137.3	135.0	136.5	0.39	3.7	1.1	136.7	0.40	3.9	1.9	12	LD
PYZDXQ	135.0	141.5	135.9 H	144.8	139.3	0.97	6.7	4.7	140.4	1.10	5.6	3.4	12	LD
QJY9ZD	130.1	129.7	130.9	130.8	130.4	-0.86	5.4	0.6	133.2	-0.26	3.7	2.6	12	LZ
QM223P	128.6	131.0	128.6	127.7	129.0	-1.16	4.7	1.5	130.2	-0.82	4.0	1.7	12	LD
UMQBGB	137.4	127.1	130.7	127.2	130.6	-0.82	3.5	4.9	133.4	-0.22	3.4	3.8	12	EN
W47EXM	126.1	126.7	129.5	126.8	127.3	-1.51	3.3	1.6	128.9	-1.06	3.4	2.2	12	LD
X9GRFL	128.9	124.0	133.2	132.1	129.5	-1.04	5.1	4.1	132.0	-0.48	5.0	3.5	12	EX
XK7NHJ	142.3	140.3 H	142.6 H	138.0 H	140.8	1.28	9.6	2.1	143.5	1.68	7.6	2.7	12	LC
XR6H86	149.4 *	149.9 *	150.4 *	146.7 *	149.1	2.99 X	4.0	1.7	148.9	2.70 *	4.5	1.3	12	LD
Y4YYW7	130.9	130.5	129.2	128.4	129.8	-0.99	5.5	1.2	130.0	-0.86	5.4	1.5	12	LD
YLJPV6	135.3	136.3 L	136.8	136.8 L	136.3	0.36	2.1	0.7	136.2	0.31	2.5	0.6 L	12	LD
YPDJT7	129.6 H	139.1	142.3	130.5 H	135.4	0.16	8.1	6.3 H	132.0	-0.48	10.0	8.0 H	10	MB
ZFNALN	137.4	137.4	136.5	140.0	137.8	0.67	5.2	1.5	137.0	0.45	4.3	4.9	12	LD

Consensus (All Labs) Results

Wk Mean	134.56	134.72	134.43	134.48	Month Mean	134.57	Grand Mean	134.57
Avg SDr	4.56	4.49	4.64	4.71	Avg SD	4.65	Avg SD	4.56
SD btwn Labs	6.11	6.06	5.92	6.15	SD btwn Labs	4.86	SD btwn Labs	5.31
Labs Incld	51	51	51	51	SD btwn Wks	2.55	SD btwn Wks	3.55
Labs Excld	1	1	1	1	Labs Incld	49	Labs Incld	50
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	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 - 42F2

TAPPI Official Test Method T826

Report #610 (H)
July 2020

	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
22MUFM	23.1	22.1	22.9	23.1	22.8	-0.51	1.7	0.5	22.8	-0.56	1.5	0.6	8	LU
2DDUP3	23.3	23.5	22.6	23.2	23.2	-0.08	1.2	0.4	23.3	-0.10	1.2	0.4 L	16	TT
2GEQGH	23.1	23.3	23.8	24.7	23.7	0.59	1.7	0.7	23.9	0.45	1.8	0.6	16	LW
2Q6CMF	23.3 L	23.8 L	22.8 L	23.1	23.2	0.02	1.0	0.4	23.2	-0.21	1.1	0.7	16	BK
37DNRE	24.5	23.5	23.6	23.5	23.8	0.64	1.8	0.5	23.6	0.19	1.7	1.0	16	LW
4DRZ2X	23.2	24.3	23.8	23.5	23.7	0.56	1.5	0.5	23.2	-0.15	1.6	1.0	16	XX
4PHKNF_AL	21.1	21.5 H	23.0	23.0	22.1	-1.29	2.2	1.0	22.9	-0.43	2.2	4.1 H	16	AL
4Y8HAU	22.5	22.5	23.2	23.7	23.0	-0.30	1.5	0.6	22.9	-0.50	1.6	0.4	16	LZ
6BWRDE	22.2	22.3	22.8	23.2	22.6	-0.71	1.6	0.4	22.7	-0.61	1.6	0.4 L	16	LA
6TVU9X_AL	24.6	23.7	24.1	24.0	24.1	1.04	1.6	0.4	24.0	0.55	1.5	0.5	16	AK
6TXF6D	23.3	23.3	24.2	22.1	23.2	0.02	1.6	0.9	24.3	0.84	1.8	0.9	16	LW
74WRDC	41.7 XL	43.5 XL	42.5 XL	41.6 XL	42.3	22.63 X	0.0	0.9	42.3	17.85 X	0.0	0.9	4	LZ
7VKH6X_AL	40.8 XL	21.3 L	21.8	38.8 XL	30.7	8.81 X	1.6	10.5 H	36.8	12.67 X	1.7	7.2 H	13	AL
9J3HMU	21.7 L	21.3 L	21.4 L	21.8 L	21.5	-1.99 *	0.4	0.3	22.2	-1.15	1.0	0.6	16	LH
9RPUH8	23.7 H	24.5 H	22.8	22.7	23.4	0.21	2.3	0.8	24.0	0.56	1.8	0.8	16	LA
A848RT_AL	23.1	24.1	24.0	23.8	23.7	0.61	1.7	0.5	23.6	0.22	1.7	0.4 L	16	AL
AE4LFF	21.6	23.1	21.3 L	22.1 L	22.0	-1.46	1.1	0.8	22.1	-1.18	1.4	0.7	16	LA
B7NHN8	23.6	21.7	22.7	22.9	22.7	-0.63	1.8	0.8	22.9	-0.46	1.9	0.7	16	LH
B7NHN8_AL	25.0	25.4 *	26.3 X	26.4 X	25.8	3.02 X	2.0	0.7	25.7	2.22 *	1.9	0.8	9	AL
BXETA9	24.5	23.1	24.3	23.9	23.9	0.84	1.4	0.6	23.8	0.38	1.9	1.3	14	LU
CGWPWC	27.3 X	26.4 X	27.2 X	27.2 X	27.0	4.52 X	2.0	0.4	26.2	2.66 *	1.8	0.7	12	LH
CHDHXL	23.8	23.1	24.6	24.0	23.8	0.73	1.6	0.6	24.2	0.76	1.6	0.6	8	LH
D2K8NP	21.2	21.6	22.4	22.4	21.9	-1.59	1.9	0.6	22.1	-1.18	1.5	0.7	12	LY
D2MTJ6	22.5	22.5	22.2	21.4 *	22.1	-1.31	1.8	0.5	22.5	-0.83	1.5	0.6	16	LW
DNBRGJ	23.4	23.5	22.9	23.9	23.4	0.22	1.9	0.4	23.4	0.03	1.8	0.4 L	16	LA
DT9AZ6	23.9	22.9	25.0	24.6	24.1	1.04	1.4	0.9	24.3	0.90	1.8	0.6	16	LU
DT9AZ6_AL	23.6 L	24.0	23.8	24.5	24.0	0.89	1.2	0.4	28.7	5.02 X	1.9	8.6 H	16	AL
DWPGFR	22.9	23.5	23.0	23.8	23.3	0.10	1.7	0.5	23.1	-0.31	1.6	0.5	16	LA
DWPGFR_AL	22.9	22.9	22.8	23.5	23.0	-0.24	1.7	0.3	23.2	-0.18	1.7	0.3 L	16	AL
FQX73Y	22.4	21.6	22.2	22.0	22.1	-1.37	1.8	0.3	22.5	-0.85	1.7	0.5	16	LU
FXEJ66_AL	24.4	24.7	23.7	23.8	24.1	1.09	1.6	0.5	23.9	0.46	1.6	0.6	16	AL
FY99NZ	22.2	22.0	21.3	21.7	21.8	-1.67	1.6	0.4	21.8	-1.50	1.6	0.4 L	16	LY
GFN39L	24.3	25.5 *	25.5 *H	25.0 H	25.1	2.16 *	2.3	0.6	25.2	1.67	1.9	0.9	16	LA
HDG6DJ	22.9	22.9	23.1	22.9	23.0	-0.28	1.7	0.1 L	23.1	-0.24	1.6	0.5	16	LU
J23AXK	23.2	22.8	23.8	24.3	23.5	0.34	1.6	0.7	23.0	-0.35	1.7	0.7	16	LY

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F2

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
J49VM6	24.0	23.3	23.8	24.1	23.8	0.68	1.4	0.4	23.2	-0.21	1.5	0.4	16	LH
JJHJXK	22.5	22.9	23.1	23.5	23.0	-0.28	1.5	0.4	23.3	-0.11	1.3	0.5	16	TT
JVEHUX	24.7	25.1	24.4	25.0	24.8	1.89	1.9	0.3	25.0	1.48	1.9	0.4	16	LU
KCHC2W	22.2	22.2	24.1	22.1	22.7	-0.68	1.3	1.0	23.3	-0.12	1.4	1.0	16	LA
KXGPLN	21.7	23.0	22.8	22.7	22.6	-0.80	1.7	0.6	23.2	-0.21	1.8	0.8	16	TT
LWYD3A	24.8	25.3	25.2 *	24.6	25.0	2.08 *	1.7	0.3	24.8	1.34	1.9	0.8	16	LH
MKQQVX_AI	21.6	23.6	21.8	23.6	22.7	-0.66	1.7	1.1	22.5	-0.83	1.7	1.1	16	AL
N27N89	22.3	No Data	22.3	23.5	22.7	-0.64	1.7	0.7	23.7	0.32	1.7	1.4	10	LA
PTP8DE	22.9	23.3	22.8	21.8	22.7	-0.62	1.8	0.6	22.9	-0.46	1.7	0.5	16	LA
PYZDXQ	24.4	24.1	23.7	23.2	23.8	0.72	1.8	0.5	24.3	0.84	2.3	0.6	12	LA
QJY9ZD	13.2 XL	13.1 XL	13.3 XL	13.3 XL	13.2	-11.84 X	0.0	0.1	16.2	-6.79 X	2.2	8.8 H	12	LY
QM223P_AL	23.7	23.5	22.3	22.7	23.0	-0.21	1.7	0.6	23.4	-0.03	1.5	1.1	16	AL
QRDRJD	23.1	23.4	23.6	22.9	23.3	0.05	1.7	0.3	24.9	1.47	2.6	2.1	16	XX
RRP2TP_AL	23.8	22.9	22.8	22.5	23.0	-0.26	1.7	0.6	21.0	-2.21 *	1.5	5.0 H	16	AL
TQA42P	24.1	24.4	24.7	No Data	24.4	1.39	1.8	0.3	24.7	1.28	1.9	4.3 H	15	LU
TZEBGP	23.6	23.2	23.9	22.7	23.4	0.15	1.7	0.5	22.8	-0.55	1.6	0.8	12	LY
UMQBGB	20.5 *	18.0 X	22.0	21.7	20.5	-3.18 X	1.5	1.8 H	21.0	-2.20 *	1.7	1.2	16	LH
W47EXM_AL	20.5 *	22.1	21.3	21.4 *	21.3	-2.27 *	1.5	0.7	21.8	-1.50	1.4	0.6	16	AK
X4J9EM	23.4	23.6	23.7	23.9	23.6	0.48	2.0	0.2	23.5	0.09	1.8	0.5	16	LY
X9GRFL	32.4 XL	35.4 XL	30.6 XL	33.9 XL	33.1	11.66 X	0.0	2.1 H	25.7	2.15 *	2.0	4.6 H	16	TT
XK7NHJ_AL	22.7	22.4	23.4	23.7	23.1	-0.21	1.8	0.6	23.7	0.25	1.6	0.8	16	AL
Y4YYW7	24.1	24.5	23.0	23.6	23.8	0.67	1.6	0.6	22.8	-0.53	1.6	0.9	16	LH
YLJPV6	23.5	23.7	23.6	23.4	23.6	0.43	1.7	0.1	23.2	-0.17	1.7	0.3 L	16	LY
YPDJT7	23.5	21.8 L	22.6	24.3	23.1	-0.20	1.6	1.1	22.6	-0.75	1.6	3.1 H	12	LA
ZFLN7V_AL	23.8	24.9	24.3	25.5 *	24.6	1.63	1.7	0.7	23.8	0.40	2.0	0.9	16	AK
ZZDP4J	22.2	22.7	22.2	22.4	22.3	-1.04	1.5	0.2	22.5	-0.85	1.5	0.4	16	LW

Consensus (All Labs) Results

Wk Mean	23.11	23.23	23.20	23.27	Month Mean	23.23	Grand Mean	23.39
Avg SDr	1.65	1.67	1.65	1.67	Avg SD	1.66	Avg SD	1.70
SD btwn Labs	1.06	1.07	1.00	0.98	SD btwn Labs	0.84	SD btwn Labs	1.06
Labs Incld	56	55	56	54	SD btwn Wks	0.59	SD btwn Wks	1.47
Labs Excld	5	5	5	6	Labs Incld	54	Labs Incld	57
Labs not Rcvd	0	1	0	1				

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
22MUFM	34.7	33.3	32.5	34.0	33.6	-0.56	1.8	1.0	33.7	-0.75	1.9	0.8	7	LU
2DDUP3	34.9	35.6 L	34.8 L	35.0	35.1	0.33	1.4	0.3	34.9	-0.02	1.3	0.3 L	12	TT
2GEQGH	32.3	33.7	33.1	34.4	33.4	-0.70	2.7	0.9	34.8	-0.05	2.4	1.4	12	LW
2Q6CMF	33.6 L	35.1 L	34.8	35.3	34.7	0.12	1.6	0.8	34.3	-0.38	1.6	0.7	12	BK
37DNRE	36.3	35.9	35.0	36.2	35.8	0.81	2.6	0.6	35.5	0.35	2.6	0.7	12	ID
4DRZ2X	34.4	34.4	34.2	34.0 H	34.3	-0.15	2.8	0.2 L	33.7	-0.75	2.5	0.7	12	XX
4PHKNF_AL	31.8 H	35.5 L	32.9 L	32.0	33.1	-0.89	2.1	1.7	35.3	0.24	2.5	4.5 H	12	XX
4Y8HAU	34.5	33.8	35.3	34.3	34.5	-0.04	2.5	0.6	34.3	-0.37	2.5	0.4 L	12	LZ
6BWRDE	33.0	32.6	32.9	33.4	33.0	-0.94	2.3	0.3	33.2	-1.07	2.2	0.5	12	LW
6TVU9X_AL	35.4 L	35.6	35.3	34.9	35.3	0.48	1.9	0.3	34.7	-0.16	2.4	0.7	12	XX
6TXF6D	36.1	34.9	35.5	32.7	34.8	0.19	2.2	1.5	36.1	0.72	2.4	1.3	12	LW
74WRDC	42.2 XL	43.8 XL	42.1 XL	44.1 XL	43.0	5.22 X	0.0	1.1	43.0	5.04 X	0.0	1.1	4	LZ
7VKH6X_AL	40.4 XL	33.0 L	32.7	34.0 L	35.0	0.31	2.9	3.6 H	38.1	1.98 *	2.9	4.7 H	7	XX
9J3HMU	32.3 L	30.4 XL	30.5 *L	31.8 L	31.2	-2.02 *	0.9	1.0	32.8	-1.32	1.7	1.8	12	LZ
9RPUH8	34.7	34.7	36.1 H	35.1	35.2	0.39	3.1	0.7	35.8	0.56	2.3	1.2	12	LA
A848RT_AL	35.6	34.5	33.4	35.1	34.7	0.08	2.6	0.9	35.0	0.03	2.6	0.8	12	AL
AE4LFF	33.3	33.8	31.3	32.6 L	32.7	-1.09	2.2	1.1	33.6	-0.85	1.9	1.2	12	LA
B7NHN8	33.8	32.7 H	35.3	34.4	34.1	-0.28	2.7	1.1	34.0	-0.60	2.4	1.3	8	LH
B7NHN8_AL	37.7	38.8 X	39.8 X	39.3 X	38.9	2.69 *	2.9	0.9	39.0	2.53 *	2.7	0.8	5	AL
BXETA9	38.0 H	35.4	36.9	35.7	36.5	1.22	2.4	1.2	36.2	0.77	2.7	1.4	12	LU
CGWPWC	39.6 *	39.6 X	38.0 *	38.5 *	38.9	2.70 *	2.3	0.8	38.0	1.92	2.4	1.0	12	LH
CHDHXL	34.8	34.8	36.0	36.4	35.5	0.61	2.2	0.8	35.5	0.36	2.2	0.8	4	LH
D2K8NP	32.6	33.3	32.5	32.7	32.8	-1.08	2.3	0.3	32.9	-1.27	2.3	0.7	8	XX
D2MTJ6	32.6 L	32.2	31.8	32.9	32.4	-1.31	2.3	0.5	33.4	-0.96	2.7	1.1	12	LW
DNBRGJ	34.6	35.2	34.8	34.4	34.7	0.13	2.9	0.4	34.7	-0.14	3.0	0.4 L	12	LA
DT9AZ6	37.2	35.2	35.6	36.5	36.1	0.99	2.6	0.9	35.4	0.31	2.6	1.0	12	LU
DT9AZ6_AL	34.7	34.7 L	34.6	35.3	34.8	0.18	1.7	0.3	37.4	1.53	2.6	4.9 H	12	AL
DWPGFR	33.4	34.7	33.9	33.4	33.8	-0.42	2.2	0.6	34.0	-0.55	2.2	0.6	12	LA
DWPGFR_AL	33.3	35.6	34.6	34.6	34.5	0.00	1.9	0.9	34.2	-0.43	1.9	0.8	8	AL
FQX73Y	32.1	32.2	31.7	32.1	32.0	-1.55	2.5	0.2	33.1	-1.12	2.8	1.2	12	LU
FXEJ66_AL	36.7	35.0	36.8	38.0 *	36.6	1.29	2.3	1.3	35.6	0.40	3.1	1.3	12	XX
FY99NZ	31.1	32.4	31.5	32.5	31.9	-1.61	2.2	0.7	32.1	-1.74	2.2	0.6	12	LY
GFN39L	37.7	36.6	36.3 H	35.4	36.5	1.20	3.4	0.9	37.8	1.76	2.9	1.3	12	LA
HDG6DJ	34.0	33.1	33.4	33.6	33.5	-0.62	2.1	0.4	34.2	-0.44	2.2	0.7	12	LU
J23AXK	35.4	34.9	34.1	34.7	34.8	0.16	2.3	0.5	34.2	-0.43	2.5	0.7	12	LZ

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 56 lb Linerboard - 56G1

TAPPI Official Test Method T826

Report #610 (H)
July 2020

	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
J49VM6	35.7	34.9 L	35.6	24.5 X	32.7	-1.13	1.7	5.5 H	33.6	-0.83	2.0	3.0	12	LH
JJHJXK	34.5 L	34.5 L	34.8 L	35.0	34.7	0.10	1.3	0.3	34.8	-0.10	1.3	0.4 L	12	TT
JVEHUX	37.6	37.3 *	37.0	36.1	37.0	1.52	2.7	0.7	36.7	1.09	2.7	0.9	12	LU
KCHC2W	34.4	32.7	32.4 L	33.6	33.3	-0.76	1.6	0.9	33.7	-0.79	1.8	2.1	12	LA
KXGPLN	31.8	33.1	33.6	34.0	33.1	-0.87	2.2	1.0	33.3	-1.00	2.3	0.7	12	TT
LWYD3A	37.7	37.5 *	37.8 *	36.1	37.3	1.68	2.7	0.8	36.8	1.18	2.7	1.0	12	LH
MKQQVX_AI	35.4	34.9	33.2	33.0	34.1	-0.24	1.8	1.2	34.4	-0.36	2.0	1.8	12	AL
N27N89	35.3	No Data	34.9	No Data	35.1	0.35	2.6	0.3	35.0	0.05	2.7	2.0	7	LA
PTP8DE	33.5	34.1	34.8	33.0	33.8	-0.42	2.1	0.8	34.0	-0.58	2.3	0.9	12	LU
PYZDXQ	35.9	35.1	34.9	36.4	35.6	0.65	2.9	0.7	35.7	0.49	2.8	0.8	12	LA
QJY9ZD	14.8 XL	15.1 XL	14.9 XL	15.1 XL	15.0	-11.99 X	0.0	0.1 L	22.0	-8.02 X	3.2	7.6 H	8	LY
QM223P_AL	33.5	33.7	33.2	34.4	33.7	-0.52	2.4	0.5	36.4	0.93	2.6	4.2 H	12	AL
QRDRJD	35.0	34.5	34.6	35.5	34.9	0.23	2.2	0.5	36.7	1.10	2.4	2.7	12	XX
RRP2TP_AL	33.0	32.2	33.3	33.7	33.1	-0.88	2.1	0.6	33.2	-1.06	2.2	0.5	12	AL
TQA42P	36.2	35.2	36.4 H	No Data	35.9	0.86	2.3	0.7	35.9	0.63	2.5	2.4	11	LU
TZEBGP	33.9	34.0	34.9	33.9	34.2	-0.21	2.5	0.5	33.7	-0.76	2.8	0.8	12	LY
UMQBGB	27.2 XL	28.9 XL	31.7 L	30.3 *L	29.5	-3.08 X	0.6	1.9	29.8	-3.17 X	2.2	1.4	12	LH
W47EXM_AL	32.0	31.5 *	31.7	31.3	31.6	-1.79	2.2	0.3	32.5	-1.53	2.0	0.8	12	AK
X4J9EM	35.4	35.6 L	35.3	35.8	35.5	0.62	2.4	0.2	35.2	0.16	2.5	0.6	12	LU
X9GRFL	42.6 XL	45.4 XL	40.7 XL	43.3 XL	43.0	5.18 X	0.0	1.9	37.8	1.77	3.4	4.2 H	12	LZ
XK7NHJ_AL	37.6	35.6	36.2	36.7	36.5	1.23	2.5	0.8	38.5	2.20 *	3.0	3.6	12	AL
Y4YYW7	34.7	36.3	34.8	35.3	35.3	0.45	2.3	0.7	33.7	-0.75	2.3	1.4	12	LH
YLJPV6	34.8	34.4	34.4	34.3	34.5	-0.02	2.3	0.2 L	34.6	-0.20	2.2	0.2 L	12	LY
YPDJT7	34.5	33.9	26.4 X	36.4	32.8	-1.06	2.4	4.4 H	33.8	-0.68	2.3	2.8	10	LA
ZFLN7V_AL	34.1	35.0	36.8	35.5	35.3	0.50	2.5	1.2	35.1	0.08	2.3	1.0	12	XX
ZZDP4J	32.0	34.4	32.5	33.4	33.1	-0.90	2.3	1.0	33.2	-1.11	2.2	0.7	12	LW

Consensus (All Labs) Results

Wk Mean	34.65	34.43	34.33	34.44	Month Mean	34.52	Grand Mean	34.93
Avg SDr	2.36	2.36	2.37	2.16	Avg SD	2.34	Avg SD	2.42
SD btwn Labs	1.86	1.30	1.75	1.63	SD btwn Labs	1.63	SD btwn Labs	1.61
Labs Incld	56	53	56	54	SD btwn Wks	1.30	SD btwn Wks	1.83
Labs Excld	5	7	5	5	Labs Incld	57	Labs Incld	58
Labs not Rcvd	0	1	0	2				

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
2GEQGH	115.5	-2.09 *	8.15	L	122.3	-1.53	7.95	4	XX
4PHKNF_AL	22.9	-9.39 X	1.28	L	123.3	-1.45	67.12 H	4	AL
6TVU9X	155.5	1.06	26.65		147.5	0.42	11.30	4	EV
6TXF6D	136.3	-0.45	20.98		134.2	-0.61	3.54	4	LS
7VKH6X_AL	154.2	0.96	14.41		149.7	0.59	9.49	3	AL
9J3HMU	151.4	0.74	13.90		155.6	1.05	2.93 L	4	LS
9RPUH8	161.1	1.51	13.71		166.1	1.86	6.92	4	LA
A848RT_AL	141.5	-0.04	25.82		131.6	-0.82	7.41	4	AL
B7NHN8_AL	140.0	-0.16	22.19		130.9	-0.87	8.64	3	AL
BXETA9	145.7	0.29	14.74		167.9	2.01 *	47.25 H	4	EV
D2MTJ6	143.6	0.13	9.32		142.3	0.01	4.11	4	EV
DNBRGJ	149.1	0.56	11.65		150.2	0.63	0.90 L	4	LS
DT9AZ6_AL	117.5	-1.93 *	15.01		126.6	-1.20	6.66	4	AL
DWPGFR	136.5	-0.44	28.29		132.1	-0.77	6.80	4	LA
DWPGFR_AL	132.4	-0.76	20.89		135.7	-0.49	8.14	4	AL
FQX73Y	161.9	1.57	20.16		156.9	1.15	3.38 L	4	EV
FY99NZ	155.4	1.06	16.53		152.1	0.78	2.84 L	4	EV
J23AXK	145.9	0.31	8.77		152.4	0.80	7.74	4	EV
LWYD3A	127.4	-1.15	20.73		122.3	-1.54	3.79	4	EV
MKQQVX_AI	150.6	0.68	11.29		143.1	0.08	6.57	4	XX
N27N89	153.0	0.87	20.19		189.8	3.70 X	59.07 H	3	LA
PYZDXQ	156.2	1.12	38.90	H	139.4	-0.21	14.59	3	LA
RRP2TP_AL	142.2	0.01	11.56		141.9	-0.01	6.14	4	AL
TQA42P	141.6	-0.03	19.32		206.1	4.97 X	67.19 H	4	EV
W47EXM	128.5	-1.06	9.23		125.2	-1.31	4.67	2	LS
XK7NHJ_AL	151.7	0.77	22.86		140.8	-0.10	12.18	4	AL
XR6H86	118.1	-1.89	13.58		150.9	0.69	29.93	4	EV
YPDJT7	135.1	-0.54	16.71		138.3	-0.29	4.98	4	LA
ZFLN7V_AL	136.1	-0.46	15.94		158.7	1.29	53.58 H	4	AK
ZHVNAH	134.2	-0.62	13.74		139.9	-0.17	5.24	4	LS

Consensus (All Labs) Results

Month Mean	142.01	Grand Mean	142.06
Avg SD	18.68	Avg SD Months	20.50
SD btwn Labs	12.69	SD btwn Labs	12.89
Labs Incld	29	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 - 42F2

TAPPI Official Test Method T538

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4Y8HAU	377.6	2.27 *	14.60	H	366.3	1.46	11.88 H	4	XX
6TVU9X_AL	347.1	-1.27	8.20		352.7	-1.06	3.72	4	AK
7VKH6X_AL	358.5	0.05	5.93		309.0	-9.11 X	106.13 H	4	AL
A848RT_AL	345.5	-1.46	8.07		352.7	-1.05	4.83	4	AL
B7NHN8_AL	361.6	0.41	6.04		358.1	-0.05	4.54	3	AL
D2K8NP	356.9	-0.13	3.35	L	355.3	-0.57	3.09	3	PP
DWPGFR_AL	352.9	-0.60	6.33		354.0	-0.81	1.49	4	AL
F6TAMP	401.4	5.05 X	7.76		397.3	7.17 X	5.13	4	TS
FXEJ66_AL	364.8	0.79	8.60		363.0	0.85	4.93	4	AL
GFN39L	356.5	-0.18	4.67		362.0	0.66	4.37	4	XX
HDG6DJ	360.9	0.33	8.67		363.3	0.91	2.25	4	XX
QM223P_AL	362.4	0.51	8.13		363.6	0.97	4.75	4	AL
ZFLN7V_AL	351.9	-0.72	5.13		351.2	-1.32	8.35	4	AK

Consensus (All Labs) Results

Month Mean	358.05	Grand Mean	358.38
Avg SD	7.81	Avg SD Months	5.65
SD btwn Labs	8.60	SD btwn Labs	5.42
Labs Incld	12	Labs Incld	11

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
PP	Technidyne Profile/Plus	TS	TMI Monitor/Smoothness
XX	Instrument make/model not specified by lab		

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4PHKNF	196.4	6.31 X	11.19 H		143.7	4.21 X	57.60 H	4	SC
6BWRDE	123.6	1.54	5.94		117.7	1.77	8.76	4	HY
6LZR6Z	106.8	0.44	2.50		108.5	0.91	5.31	4	TM
6TVU9X	81.4	-1.22	2.79		82.5	-1.54	3.63	4	TM
9J3HMU	89.6	-0.68	1.52		97.9	-0.09	15.72 H	3	TM
BXETA9	78.0	-1.44	1.87		83.1	-1.48	3.62	4	TM
D2K8NP	103.0	0.20	4.18		104.8	0.56	1.64	3	HY
DWPGFR	81.6	-1.21	2.19		94.5	-0.41	8.66	4	TM
FXEJ66	42.2	-3.78 X	0.29 L		42.4	-5.31 X	0.84 L	4	LZ
GFN39L	87.6	-0.81	2.07		90.4	-0.80	2.01	4	SC
HDG6DJ	105.0	0.32	2.24		105.6	0.64	1.38	4	HY
J23AXK	86.0	-0.92	6.02		89.1	-0.92	3.97	4	XX
KCHC2W	91.0	-0.59	3.67		92.3	-0.61	2.90	4	TM
LWYD3A	114.4	0.94	3.78		113.5	1.38	3.11	3	XX
LYMP2F	112.6	0.82	1.14		96.6	-0.21	14.05	4	TM
MKQQVX	99.0	-0.07	3.81		97.7	-0.11	2.28	4	TM
PTP8DE	98.4	-0.11	2.30		101.1	0.21	1.89	4	HZ
QM223P	104.9	0.32	1.26		101.0	0.20	9.23	4	TM
TQA42P	84.8	-1.00	2.28		80.3	-1.75	4.49	4	TM
W47EXM	133.3	2.18 *	6.66		110.3	1.08	15.68 H	4	TM
XK7NHJ	124.0	1.57	9.62 H		109.8	1.03	11.50	4	SC
XR6H86	109.4	0.61	2.70		112.1	1.25	3.99	4	HY
ZFLN7V	87.4	-0.83	2.51		89.4	-0.89	1.49	4	HZ
ZHVNAH	98.6	-0.09	1.52		96.4	-0.23	2.29	4	HY

Consensus (All Labs) Results

Month Mean	100.02	Grand Mean	98.83
Avg SD	3.88	Avg SD Months	7.41
SD btwn Labs	15.28	SD btwn Labs	10.64
Labs Incld	22	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	98.99	15.32	1.03	19
Modified Scott Bond Mechanics	114.28	13.18	14.26	2

Analysis Notes

FXEJ66 - Method used 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
2GEQGH	26.0	-0.38	3.16		27.7	0.04	2.54	4
4PHKNF	32.1	1.78	1.99		32.1	1.80	0.85	4
4Y8HAU	32.6	1.98 *	1.39		33.4	2.31 *	1.04	4
6TVU9X	27.7	0.24	2.56		27.9	0.15	0.40	4
6TXF6D	29.8	0.98	0.84		29.1	0.59	1.04	4
8F48RU	25.8	-0.45	0.84		30.0	0.95	4.53 H	4
8MKB8A	24.0	-1.10	1.41		24.3	-1.30	1.72	4
9J3HMU	22.6	-1.60	2.07		24.0	-1.42	1.40	4
A848RT	30.5	1.21	3.72		29.5	0.77	0.93	4
AWH3KT	26.4	-0.24	5.13 H		27.9	0.12	3.63	4
BXETA9	28.8	0.62	1.64		27.0	-0.22	2.23	4
D2K8NP	26.5	-0.20	2.55		28.4	0.32	1.76	3
D2MTJ6	21.8	-1.88	3.11		27.2	-0.16	3.73	4
DNBRGJ	25.1	-0.70	0.89		25.1	-0.96	0.41	4
DWPGFR	23.6	-1.24	2.88		24.2	-1.32	0.71	4
FQX73Y	28.6	0.55	1.60		28.9	0.51	3.59	4
FXEJ66	28.8	0.62	1.64		28.9	0.53	1.15	4
FY99NZ	29.6	0.90	2.49		29.1	0.61	0.54	4
GFN39L	28.6	0.55	1.14		28.7	0.46	0.66	4
HDG6DJ	26.9	-0.07	0.51 L		25.4	-0.84	1.27	4
J23AXK	23.8	-1.17	3.90		25.8	-0.69	1.50	4
LWYD3A	30.2	1.13	3.20		28.7	0.46	1.48	4
MKQQVX	28.8	0.62	2.17		28.2	0.24	1.91	4
N27N89	23.8	-1.17	1.20		23.1	-1.77	1.72	3
RRP2TP	23.2	-1.38	1.64		23.8	-1.50	1.05	4
TQA42P	27.4	0.12	3.29		29.0	0.55	1.04	4
W47EXM	26.6	-0.17	5.03 H		26.3	-0.49	1.97	4
XE6FBQ	25.6	-0.52	2.07		24.7	-1.13	0.68	4
XK7NHJ	25.4	-0.60	1.14		25.6	-0.79	1.18	4
Y4YYW7	28.3	0.44	2.84		29.4	0.73	0.78	4
ZFLN7V	30.2	1.13	3.20		31.1	1.42	1.03	4

Consensus (All Labs) Results

Month Mean	27.07	Grand Mean	27.55
Avg SD	2.58	Avg SD Months	1.87
SD btwn Labs	2.80	SD btwn Labs	2.53
Labs Incld	31	Labs Incld	31

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
2GEQGH	21.3	-0.51	2.11		22.4	0.09	0.74	4	LP
4Y8HAU	25.0	1.20	4.33	H	23.3	0.67	1.29	4	GA
6TVU9X_AL	22.2	-0.08	2.15		22.9	0.42	0.66	4	AK
7VKH6X_AL	21.6	-0.35	1.57		21.8	-0.25	0.26	2	XX
9J3HMU	27.3	2.27 *	3.80		23.2	0.57	3.27 H	4	TD
9RPUH8	25.8	1.55	1.09	L	26.2	2.47 *	0.47	3	LA
A848RT_AL	19.0	-1.60	3.87		19.4	-1.72	0.75	4	AL
AWH3KT_AL	22.8	0.18	2.31		22.3	0.04	0.60	4	AL
B7NHN8_AL	23.4	0.45	1.41		23.7	0.92	0.38	3	AL
BXETA9_AL	23.4	0.45	1.11		23.3	0.66	1.62	4	AL
D2K8NP	26.2	1.76	4.59	H	24.2	1.20	1.88	3	TP
D2MTJ6	17.9	-2.11 *	0.80	L	19.4	-1.73	1.12	4	XX
DNBRGJ	21.2	-0.58	0.95	L	21.3	-0.57	0.25	4	LA
DT9AZ6_AL	22.4	0.00	1.90		22.4	0.12	0.38	4	AL
DWPGFR	25.2	1.31	2.82		24.6	1.43	0.69	4	LA
DWPGFR_AL	24.2	0.85	1.29		24.3	1.25	0.33	4	AL
FQX73Y	22.2	-0.10	1.75		22.3	0.06	0.81	4	GA
FT6BWM	22.9	0.23	1.10	L	22.1	-0.11	0.72	4	XX
FXEJ66_AL	25.0	1.22	1.55		23.7	0.88	1.21	4	AL
GN4HK4	21.0	-0.63	1.66		20.9	-0.83	0.22	4	LP
HDG6DJ	24.4	0.92	4.77	H	23.1	0.56	0.84	4	TP
J23AXK	23.4	0.46	1.81		23.0	0.44	0.59	4	LP
KEL8KZ	19.7	-1.27	3.48		18.8	-2.14 *	2.06	4	GA
LWYD3A	21.3	-0.50	1.68		22.4	0.09	0.96	4	LP
MKQQVX_AI	23.2	0.37	1.49		23.6	0.83	0.59	4	XX
MZWA8U	23.2	0.36	1.09	L	22.7	0.30	0.47	4	LP
N27N89	19.3	-1.45	6.24	H	20.9	-0.83	1.46	3	LA
PYZDXQ	23.0	0.26	0.32	L	22.3	0.07	0.75	3	LA
QM223P_AL	22.3	-0.04	1.64		22.0	-0.12	0.59	4	AL
RRP2TP_AL	21.4	-0.47	1.83		22.3	0.06	0.91	4	AL
TQA42P_AL	22.2	-0.12	2.14		22.7	0.27	0.80	4	AL
XK7NHJ_AL	20.1	-1.07	1.66		19.8	-1.52	2.48 H	4	AL
YLJPV6	20.3	-0.98	0.67	L	20.9	-0.84	1.15	4	LP
ZFLN7V_AL	19.0	-1.56	2.08		19.3	-1.84	0.16 L	4	AK
ZFNALN	21.4	-0.45	1.76		20.8	-0.89	1.73	4	XX
ZHVNAH	22.5	0.03	2.00		22.2	-0.01	0.20	4	LP

Consensus (All Labs) Results

Month Mean	22.41	Grand Mean	22.24
Avg SD	2.49	Avg SD Months	1.15
SD btwn Labs	2.16	SD btwn Labs	1.62
Labs Incld	36	Labs Incld	36

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
GA	Gurley Precision #4340 Automatic 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
22MUFM	59.8	58.3	57.1	57.7	58.2	0.03	2.8	1.2	58.5	0.35	2.8	0.9	8	LZ
2DDUP3	55.5 H	58.0 H	57.8	56.2 H	56.9	-0.55	6.0	1.2	57.0	-0.35	5.1	0.8	16	TG
2GEQGH	61.3	58.6	60.3	58.9	59.8	0.71	3.6	1.3	59.2	0.67	3.6	1.6	16	LD
37DNRE	56.6	56.3	57.0	57.9	57.0	-0.52	3.8	0.7	58.7	0.43	3.1	1.7	16	LD
3W3L7D	55.0	58.6	59.4	59.4	58.1	-0.03	3.8	2.1	58.9	0.53	4.0	1.8	8	LD
47TDAX	62.9	60.3	62.3	61.5 H	61.7	1.56	5.2	1.1	62.0	1.99 *	5.5	2.3	16	EM
4DRZ2X	59.7 L	59.1 L	61.5 L	57.5 L	59.4	0.56	0.8	1.6	60.7	1.36	1.0	1.9	16	XX
4Y8HAU	60.9	58.6 H	56.9	57.6	58.5	0.15	3.7	1.8	57.4	-0.15	3.5	2.0	16	LZ
6BWRDE	55.7	57.8	57.4	58.8	57.4	-0.32	2.9	1.3	57.4	-0.15	3.4	1.6	16	LD
7VKH6X	51.6 *	56.0	60.7	58.0	56.6	-0.69	3.7	3.8 H	57.0	-0.36	3.5	2.6	16	LD
9B63J9	60.1	59.6	61.7	61.8	60.8	1.15	3.6	1.1	60.3	1.16	4.2	2.1	16	LD
9RPUH8	61.3	60.7	61.1	63.2	61.6	1.50	4.5	1.1	59.2	0.66	4.3	1.7	16	TU
AE3TJT	60.9	58.5	58.2	63.2	60.2	0.89	2.5	2.3	58.7	0.44	2.8	1.6	15	LC
BXETA9	58.8	61.5	60.0	56.4	59.2	0.44	3.3	2.2	60.0	1.04	3.6	5.0 H	16	LC
CGWPWC	54.9	54.4	54.1	56.6	55.0	-1.37	4.0	1.1	53.1	-2.17 *	3.2	1.6	12	LD
CHDHXL	63.0	62.4 H	61.2 H	64.3 *	62.7	1.99 *	5.1	1.3	61.3	1.65	4.9	2.0	8	LD
D2K8NP	54.6	54.3	55.8	54.0	54.7	-1.51	3.3	0.8	55.9	-0.88	3.7	2.0	12	LD
DWPGFR	57.0	57.8	57.8	58.5	57.8	-0.17	4.3	0.6	58.2	0.22	4.2	2.0	16	LD
FQX73Y	55.0	56.5	58.2	55.9	56.4	-0.76	3.5	1.3	56.1	-0.79	3.7	2.2	12	LD
FXEJ66	56.3	53.5 *	57.0	53.8	55.2	-1.30	3.0	1.8	55.6	-1.00	3.5	1.4	16	LD
FY99NZ	59.5	62.2	61.3	62.5	61.4	1.40	3.5	1.3	58.2	0.20	3.7	2.5	16	EN
GN4HK4	60.1	57.2	59.6	58.5	58.8	0.30	3.0	1.3	60.1	1.09	3.7	1.4	16	LD
GV42F8	60.5 L	60.5	60.7 L	60.7	60.6	1.07	1.7	0.1 L	60.7	1.37	1.9	0.1 L	16	LD
HDG6DJ	61.8	58.6	59.5	54.4	58.6	0.18	3.3	3.1 H	58.1	0.16	3.7	2.5	16	LC
J23AXK	58.1	58.8	57.3	57.4	57.9	-0.11	3.2	0.7	57.8	0.04	3.6	0.8	16	LZ
J49VM6	59.4	61.2 L	59.0	59.8	59.9	0.74	1.6	1.0	59.5	0.79	2.6	0.7	16	EN
JJHJXK	59.5	58.5	57.1	59.3	58.6	0.19	4.0	1.1	58.8	0.48	3.8	0.7	16	TJ
JKTLKJ	59.8	59.6	59.9	59.7	59.8	0.70	3.4	0.1 L	59.6	0.86	3.9	1.2	16	LD
KCHC2W	58.2	55.6	57.5	57.6	57.2	-0.40	3.1	1.1	56.9	-0.40	3.2	1.5	16	LC
KEL8KZ	60.0	61.1	57.1	61.9	60.0	0.82	4.1	2.1	60.6	1.32	4.2	2.0	16	LD
KGFV3V	57.0	57.9	58.3	57.5	57.7	-0.21	3.4	0.6	57.8	0.00	3.3	0.6	16	LC
LYMP2F	59.9	59.8 L	59.5	59.9	59.8	0.70	1.8	0.2 L	60.7	1.38	2.0	0.7	16	TU
MQCMFE	57.3 L	57.3	55.9	56.5 L	56.8	-0.60	1.6	0.7	57.3	-0.23	1.5	0.7	16	MB
MZWA8U	59.5	62.6	59.5	59.9	60.4	0.96	2.7	1.5	58.3	0.23	3.1	2.0	16	LD
N27N89	56.1	No Data	55.5	55.7	55.8	-1.04	4.2	0.3	55.7	-0.95	4.2	1.7	8	MB

	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
PMJTDU	56.7	56.4	57.2	57.7	57.0	-0.50	3.3	0.6	57.4	-0.19	3.3	0.5	16	LD
PTP8DE	54.8	57.1	55.4	55.0	55.6	-1.12	2.6	1.1	55.7	-0.96	2.9	1.4	16	LD
RMFNCQ	57.7 L	57.7	58.0	57.8 L	57.8	-0.15	1.6	0.1 L	57.9	0.08	1.4	0.4 L	16	LD
RRP2TP	59.8	57.4	58.4	58.4	58.5	0.15	3.8	1.0	59.2	0.68	4.1	2.0	16	LZ
TZEBGP	55.4	60.1	59.8 H	59.4	58.7	0.22	4.1	2.2	54.8	-1.40	3.5	3.4	12	LD
U7FUB9	65.9 *	63.7 *	64.6 *	63.3	64.4	2.70 *	3.4	1.1	65.2	3.47 X	4.6	1.6	16	LC
UMQBGB	53.2	53.7	53.3 *	54.6	53.7	-1.94 *	3.0	0.7	55.3	-1.17	2.9	2.7	16	EN
VJHH33	57.9	57.1	58.7	51.9 *L	56.4	-0.77	2.8	3.1 H	55.7	-0.96	3.6	2.0	12	TH
W6DWWH	57.8	58.1	57.2	56.9	57.5	-0.28	3.7	0.5	57.6	-0.06	3.5	0.5	16	LD
X4J9EM	59.5	57.2	58.5	58.2	58.4	0.09	3.5	0.9	59.0	0.55	3.9	1.1	16	LD
X9GRFL	53.1	55.1	53.5	55.9	54.4	-1.64	3.1	1.3	55.3	-1.16	3.4	2.0	16	EM
XE6FBQ	51.3 *	50.8 X	48.6 X	49.9 X	50.2	-3.48 X	3.2	1.2	54.4	-1.58	3.5	2.8	16	LZ
Y4YYW7	55.9	57.7	55.5	57.6	56.7	-0.65	3.2	1.2	56.9	-0.39	3.6	1.3	16	LD
YPDJT7	46.5 X	55.9	43.6 X	54.6	50.1	-3.48 X	4.2	6.0 H	52.3	-2.57 *	4.5	4.2 H	12	MB
ZFLN7V	53.6	54.9	51.9 *	54.5	53.7	-1.92	4.2	1.3	54.2	-1.64	4.1	2.4	16	LD
ZHVNAH	56.8 L	No Data	56.7 L	No Data	56.7	-0.62	1.3	0.0	57.3	-0.22	1.9	1.1	7	LD

Consensus (All Labs) Results

Wk Mean	57.94	58.21	58.20	58.12	Month Mean	58.15	Grand Mean	57.77
Avg SDr	3.44	3.42	3.42	3.57	Avg SD	3.44	Avg SD	3.55
SD btwn Labs	3.04	2.37	2.48	2.77	SD btwn Labs	2.30	SD btwn Labs	2.15
Labs Incld	50	48	49	49	SD btwn Wks	1.45	SD btwn Wks	1.95
Labs Excld	1	1	2	1	Labs Incld	49	Labs Incld	50
Labs not Rcvd	0	2	0	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
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 250

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

TAPPI Official Test Method T843

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
22MUFM	67.3	68.4	67.3	67.0	67.5	-0.45	3.6	0.6	68.4	-0.04	3.3	1.4	8	LZ
2GEQGH	72.2	69.1	71.0	69.4	70.4	0.63	3.4	1.4	71.3	1.12	4.1	1.7	16	LD
2Q6CMF	64.9	69.3	68.5	71.7	68.6	-0.04	3.1	2.8	68.3	-0.09	4.1	2.0	16	LD
37DNRE	67.6	69.3	68.6	69.0	68.6	-0.03	2.5	0.7	68.6	0.05	2.8	1.6	16	LD
4DRZ2X	69.6 L	72.5 *L	70.7 L	72.7	71.4	0.97	1.1	1.5	70.7	0.90	1.0	1.8	16	XX
6BWRDE	75.5 *	75.7 X	70.6	76.9 *	74.7	2.19 *	3.1	2.8	73.9	2.16 *	3.6	1.8	16	LD
74WRDC	55.3 X	56.6 X	53.6 X	53.8 XH	54.8	-5.11 X	3.7	1.4	54.8	-5.53 X	3.7	1.4	4	LZ
BXETA9	71.8	69.8	69.6	57.5 XH	67.2	-0.57	4.1	6.5 H	67.1	-0.57	5.5	6.7 H	16	XX
D2K8NP	69.3	71.8	70.8	69.9	70.5	0.64	4.0	1.1	69.9	0.54	3.8	2.0	12	LD
DWPGFR	66.1	68.7	67.2	66.9	67.2	-0.55	4.0	1.1	67.9	-0.26	3.9	1.7	16	LD
FT6BWM	67.3	67.0	66.9	67.9 H	67.3	-0.53	3.5	0.4	67.2	-0.54	2.5	1.5	16	LZ
FXEJ66	70.6	70.5	69.6	67.4	69.5	0.30	3.2	1.5	68.6	0.05	3.4	1.4	16	LD
FY99NZ	68.6	70.5	67.5	72.6	69.8	0.40	2.9	2.3	65.3	-1.28	3.7	3.2	16	EN
GN4HK4	70.0	68.6	71.5	71.1	70.3	0.58	3.7	1.3	70.4	0.75	3.7	1.7	16	LD
HDG6DJ	71.7	71.8	74.5 *	68.8	71.7	1.10	2.9	2.4	70.0	0.59	3.2	2.3	16	LC
KGFV3V	67.5	68.2	67.8	68.5	68.0	-0.26	3.4	0.4	67.9	-0.25	3.3	0.5 L	16	LD
MQCMFE	64.0	64.0 XL	63.7 *	63.9	63.9	-1.77	1.6	0.1 L	64.1	-1.77	1.5	1.5	16	MB
MZWA8U	64.4	67.5	69.1	68.7	67.4	-0.47	3.5	2.1	66.9	-0.65	3.4	1.7	16	LD
RMFNCQ	68.7	68.4	68.7	68.6	68.6	-0.05	1.9	0.1 L	68.5	0.01	2.0	0.3 L	16	LD
RRP2TP	70.5	68.0	66.5	66.4	67.9	-0.32	3.0	1.9	68.0	-0.20	3.6	1.4	16	LZ
ZFLN7V	73.8	70.1	71.3 H	68.2 H	70.8	0.78	5.2	2.4	72.1	1.46	3.9	1.9	16	LD
ZHVNAH	61.7 *	No Data	No Data	62.0 *	61.8	-2.54 *	4.1	0.2	63.6	-1.99 *	3.5	1.9	7	LD

Consensus (All Labs) Results

Wk Mean	68.72	69.42	69.07	68.88	Month Mean	68.72	Grand Mean	68.51
Avg SDr	3.41	3.20	3.29	3.32	Avg SD	3.35	Avg SD	3.46
SD btwn Labs	3.39	1.55	2.34	3.22	SD btwn Labs	2.72	SD btwn Labs	2.48
Labs Incld	21	18	20	20	SD btwn Wks	2.12	SD btwn Wks	2.25
Labs Excld	1	3	1	2	Labs Incld	21	Labs Incld	21
Labs not Rcvd	0	1	1	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)
MB	Messmer Buchel K440	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 #610 (H)
July 2020

	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
3W3L7D	44.1	43.9	46.2 H	47.0	45.3	0.92	4.2	1.5	45.9	0.96	3.8	1.4	8	LZ
47TDAX	39.4	40.3	42.2	42.0	41.0	-1.10	3.8	1.4	41.9	-0.27	3.5	2.4	16	EM
4Y8HAU	43.8	41.7	43.8	43.8	43.3	-0.04	3.6	1.1	43.3	0.14	3.2	1.0	16	LD
6BWRDE	43.7	45.1	43.1	44.4	44.1	0.35	3.5	0.8	44.0	0.38	4.6	1.4	16	XX
7VKH6X	42.7	44.3	43.0	46.7	44.2	0.39	2.8	1.8	44.2	0.43	3.2	1.4	16	LD
9B63J9	45.8	44.0	46.0	47.6	45.9	1.18	3.3	1.5	44.9	0.64	3.4	1.6	16	LD
AE3TJT	46.2	46.6	47.1	49.2	47.3	1.83	2.9	1.4	48.4	1.72	2.9	1.5	15	LC
AE4LFF	41.1	42.7	44.4	42.7	42.7	-0.29	3.6	1.3	42.6	-0.06	2.9	2.3	16	LZ
D2K8NP	46.5	44.7	43.9	44.9	45.0	0.78	3.8	1.1	45.0	0.67	4.5	1.3	12	LD
FXEJ66	42.7	43.5	43.6	44.5	43.6	0.11	2.9	0.7	42.0	-0.24	3.0	1.7	16	LD
GBU7LF	42.4	42.5	42.6	44.9	43.1	-0.11	3.3	1.2	44.0	0.38	3.1	1.6	16	LZ
GN4HK4	45.6	43.7	43.3	47.2	44.9	0.74	3.3	1.8	45.8	0.91	3.4	1.5	16	LD
GV42F8	43.5	43.5	43.5	43.2	43.4	0.04	2.1	0.1 L	43.9	0.33	2.1	0.6	16	LD
HDG6DJ	47.4	46.6	46.9	44.8	46.4	1.44	2.8	1.2	44.7	0.58	3.4	1.8	16	LC
JKTLKJ	44.4	44.5	44.9	44.8	44.7	0.62	3.5	0.2 L	44.6	0.55	3.1	0.4 L	16	LD
KCX3JF	44.2	42.8	43.4	44.5	43.7	0.18	2.4	0.7	43.8	0.31	2.8	1.2	16	TH
KEL8KZ	41.9 H	36.1 *H	40.6	46.4	41.2	-0.98	4.7	4.2 H	43.7	0.29	4.5	3.2	16	LD
LYMP2F	41.5 L	41.1 L	40.4 L	40.5 L	40.9	-1.16	0.9	0.5	41.0	-0.55	1.5	0.4 L	16	TU
MQCMFE	39.4	39.5	39.6	40.1	39.7	-1.71	1.7	0.3	40.4	-0.76	1.6	1.4	16	MB
MZWA8U	42.1	43.1	40.5	41.8	41.9	-0.69	3.3	1.1	41.3	-0.46	3.4	1.3	16	LD
N27N89	44.3	42.5	41.8	48.9	44.4	0.49	4.0	3.2 H	45.9	0.96	3.9	2.4	12	MB
PMJTDU	42.3	42.4	42.8	42.8	42.6	-0.36	1.7	0.3 L	43.0	0.05	1.9	0.6	16	LC
PTP8DE	44.2	45.8	46.2	45.0	45.3	0.91	3.5	0.9	45.1	0.70	3.3	1.4	16	LD
U7FUB9	34.9 *	34.6 *	36.2 *	36.5 *	35.5	-3.65 X	2.2	1.0	34.9	-2.45 *	2.8	1.0	16	XX
V3CA6M	39.4	40.8	39.1	39.1	39.6	-1.75	4.3	0.8	38.5	-1.34	5.7	2.4	16	TX
VJHH33	34.0 *	35.3 *	36.0 *	33.6 X	34.7	-4.03 X	2.2	1.1	34.5	-2.59 *	2.1	1.2	12	TH
X9GRFL	37.7	40.7	38.5	41.3	39.5	-1.78	2.4	1.7	39.7	-0.97	3.1	1.9	16	EM

Consensus (All Labs) Results

Wk Mean	42.41	42.29	42.57	44.02	Month Mean	43.33	Grand Mean	42.81
Avg SDr	2.94	3.48	3.20	3.16	Avg SD	3.25	Avg SD	3.36
SD btwn Labs	3.27	3.09	2.96	3.03	SD btwn Labs	2.14	SD btwn Labs	3.22
Labs Incld	27	27	27	26	SD btwn Wks	1.52	SD btwn Wks	1.64
Labs Excld	0	0	0	1	Labs Incld	25	Labs Incld	26
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)	TX	TMI Digital Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T826

Report #610 (H)
July 2020

	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
4DRZ2X	14.1	13.4 H	13.1	14.7 H	13.8	-0.03	1.5	0.7	13.4	-0.69	1.1	0.6	16	XX
4Y8HAU	14.4	13.9	14.0	13.8	14.0	0.27	1.1	0.3	13.8	0.08	1.1	0.3	16	LZ
7VKH6X	13.1 H	15.6 L	13.2	14.0	14.0	0.20	1.4	1.2	14.3	1.32	1.2	3.6 H	16	LZ
9RPUH8	13.6	13.7	14.7	14.0	14.0	0.28	1.1	0.5	13.7	0.00	1.1	0.4	16	LA
AE4LFF	12.5 L	13.4	13.7	14.4	13.5	-0.65	0.8	0.8	13.3	-0.86	0.8	0.5	16	LA
D2K8NP	12.7	13.0 L	13.1	12.7	12.9	-1.70	0.9	0.2	13.2	-1.20	1.1	0.4	12	LB
DWPGFR	14.6	14.0	14.4	14.5	14.4	0.91	1.3	0.3	13.9	0.49	1.1	0.3	16	LA
FQX73Y	13.2	13.0	12.8	14.0 H	13.2	-1.09	1.3	0.5	13.5	-0.53	1.2	0.4	16	LU
FXEJ66	14.5	15.6	14.5	14.9	14.9	1.82	0.8	0.5	14.7	2.30 *	1.0	0.5	16	LA
GBU7LF	12.5 H	12.4	13.0 H	12.9	12.7	-2.03 *	1.4	0.3	13.3	-0.98	1.2	0.6	16	LA
HDG6DJ	13.9	13.4	14.0	14.0	13.8	-0.04	1.1	0.3	13.8	0.14	1.1	0.3	16	LU
J49VM6	14.8	14.1	14.3	15.4 *	14.7	1.41	0.9	0.6	14.2	1.17	1.0	0.4	16	LH
JJHJXK	13.8	13.8	13.6	13.9	13.8	-0.13	0.9	0.1	13.5	-0.40	0.9	0.4	16	TT
KEL8KZ	13.8 H	14.4	14.3 L	14.5	14.3	0.72	1.2	0.3	14.1	0.77	1.2	0.8	16	LA
KGFV3V	14.3	13.6	13.0	13.4	13.6	-0.45	0.9	0.5	13.6	-0.25	0.9	0.5	16	LB
N27N89	13.2	No Data	15.4 *L	No Data	14.3	0.80	0.7	1.6	13.8	0.28	1.0	0.8	8	LA
PMJTDU	13.8	14.1	14.1	13.4	13.8	-0.04	1.2	0.3	13.8	0.07	1.1	0.4	12	LH
RMFNCQ	13.4 L	16.4 *L	13.5 L	13.6 L	14.2	0.63	0.5	1.5 H	13.8	0.09	0.4	0.7	16	LA
TEGM4C	22.6 X	20.8 XH	19.8 XH	21.9 XH	21.3	13.10 X	1.7	1.2	21.3	17.10 X	1.7	1.3	12	TX
UMQBGB	12.4	13.0	13.3	13.7	13.1	-1.29	1.0	0.6	12.8	-2.09 *	1.1	0.4	16	LH
V3CA6M	11.6 *	11.4 *	11.8 *L	11.9 *	11.7	-3.80 X	0.8	0.2	12.2	-3.33 X	0.9	0.4	16	TT
W47EXM	13.1	13.1	13.1	13.4	13.2	-1.17	0.9	0.2	13.1	-1.31	0.9	0.3	16	LA
Y4YYW7	14.2	14.4	14.3	14.2	14.3	0.76	1.0	0.1 L	13.9	0.50	0.9	0.4	16	LH
YPDJT7	13.1	No Data	48.3 X	13.8	25.1	19.80 X	1.1	20.1 H	16.4	6.04 X	1.1	10.6 H	11	LA
ZFLN7V	14.3	14.1	14.5	14.3	14.3	0.82	1.0	0.2	14.2	1.11	1.1	0.4	16	LA

Consensus (All Labs) Results

Wk Mean	13.54	13.81	13.72	13.89	Month Mean	13.85	Grand Mean	13.72
Avg SDr	1.12	1.04	1.04	1.04	Avg SD	1.07	Avg SD	1.04
SD btwn Labs	0.82	1.09	0.79	0.76	SD btwn Labs	0.57	SD btwn Labs	0.45
Labs Incld	24	22	23	23	SD btwn Wks	0.66	SD btwn Wks	0.90
Labs Excld	1	1	2	1	Labs Incld	22	Labs Incld	22
Labs not Rcvd	0	2	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)
TX	TMI (model not specified)	XX	Instrument make/model not specified by lab

End of Report