Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #652 - January 2024

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX18	Top to Bottom Box Compression Strength, Corrugated Boxes
202	EC15	Edgewise Compressive Strength, by T811, Corrugated Board
203	EC15	Edgewise Compressive Strength by T839, Corrugated Board
205	42H3	Bursting Strength (Mullen), 42 lb Linerboard
206	52J1	Bursting Strength (Mullen), 52 lb Linerboard
215	42H3	Ring Crush, 42 lb Linerboard
216	52J1	Ring Crush, 52 lb Linerboard
223	42H3	STFI, 42 lb Linerboard
224	52J1	STFI, 52 lb Linerboard
228	42H	Roughness - Stylus Method, 42 lb Linerboard
229	42H3	Roughness - Sheffield Method, 42 lb Linerboard
231	42H	Internal Bond, 42 lb Linerboard
234	42H	COF Inclined Plane (Slide Angle), 42 lb Linerboard
237	42H	Air Resistance, 42 lb Linerboard
240	CM13	Flat Crush Strength (CMT), 26 lb Corrugating Medium
250	CM13	Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium
255	CM13	Ring Crush (RCT), 26 lb Corrugating Medium
261	CM13	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; 35 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# Corrugating Medium	CM13	September 2023 - Current
	CM12	June 2022 - August 2023
35# Corrugating Medium	35E3	June 2022 - Current
	35E2	June 2020 - April 2022
42# Corrugating Medium	42H3	October 2023 - Current
	42H1	April 2022 - November 2022
52# Corrugating Medium	52J1	November 2023 - Current
	56G2	May 2021 - May 2022

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, agriculture, hemp, 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 100 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
4L4JRZ	626.2	0.74	37.51		626.2	0.74	0.00	1	EX
4VUCFD	595.2	0.04	17.43		595.2	0.04	0.00	1	EX
7QAVM4	540.6	-1.19	29.74		540.6	-1.19	0.00	1	LG
AMMQU7	581.2	-0.28	39.29		581.2	-0.28	0.00	1	LG
B3BQ84	607.7	0.32	46.73		607.7	0.32	0.00	1	LO
CNNZNR	580.0	-0.30	27.06		580.0	-0.30	0.00	1	EX
EDYHYW	543.4	-1.13	45.33		543.4	-1.13	0.00	1	LS
F8NUYZ	601.9	0.19	17.74		601.9	0.19	0.00	1	LG
FL92KK	564.3	-0.66	52.67		564.3	-0.66	0.00	1	ER
GJG47L	687.7	2.12 *	20.89		687.7	2.12 *	0.00	1	LG
GJWU8Y	546.5	-1.06	35.42		546.5	-1.06	0.00	1	LG
J9RFNG	599.0	0.12	45.90		599.0	0.12	0.00	1	LM
JGLQAT	632.1	0.87	29.71		632.1	0.87	0.00	1	LS
M4J6HQ	585.1	-0.19	16.76		585.1	-0.19	0.00	1	LM
MTNQKF	578.7	-0.33	41.53		578.7	-0.33	0.00	1	EX
N79TGD	598.0	0.10	50.46		598.0	0.10	0.00	1	EX
NLGETU	541.7	-1.16	34.66		541.7	-1.16	0.00	1	LL
P8E6NL	583.9	-0.22	53.02		583.9	-0.22	0.00	1	TB
T7BGXL	596.0	0.06	55.24		596.0	0.06	0.00	1	ET
TP3PVF	707.4	2.56 *	31.97		707.4	2.56 *	0.00	1	LS
VM6NRG	578.0	-0.35	26.63		578.0	-0.35	0.00	1	ER
W24JFF	688.5	2.14 *	19.44		688.5	2.14 *	0.00	1	ER
WEUL7F	565.6	-0.63	44.64		565.6	-0.63	0.00	1	ES
Y6H7CD	613.6	0.45	36.78		613.6	0.45	0.00	1	LG
YMZ6JW	561.4	-0.72	7.55	L	561.4	-0.72	0.00	1	EX
ZG7VM3	584.7	-0.20	74.47	H	584.7	-0.20	0.00	1	EX
ZN3MVW	535.4	-1.31	28.32		535.4	-1.31	0.00	1	ER

Consensus (All Labs) Results

Month Mean	593.48	Grand Mean	593.48
Avg SD	38.66	Avg SD Months	0.00
SD btwn Labs	44.47	SD btwn Labs	44.47
Labs Incld	27	Labs Incld	27

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	581.50	28.07	11.98	8
Clip sealing	593.53	45.85	0.05	18
Staple sealing	688.48	0.00	95.00	1

Key to Instrument Codes Reported by Participants

ER	Emerson 6200 Series	ES	Emerson 8510
ET	Emerson 7200	EX	Emerson Apparatus (Model not specified)
LG	TLS / L.A.B. Validator Series	LL	Lansmont 76-5K
LM	Lansmont 122-15k	LO	Lansmont 152-30k
LS	Lansmont Squeezer	TB	TMI Monitor/Compression Tester, Model 17-70

Containerboard Interlaboratory Testing Program

Analysis 202

Edgewise Compressive Strength, by T811, Corrugated Board - EC15

TAPPI Official Test Method T811

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4QYAZW	47.4	0.98	1.44		49.0	1.57	3.61	4	XX
4VUCFD	44.2	0.14	2.32		44.3	0.08	0.77	4	LC
C36XTR	38.0	-1.47	1.03	L	41.3	-0.86	2.55	4	TS
CNNZNR	44.2	0.15	1.97		43.6	-0.13	0.71	4	LC
DUBCZY	46.9	0.85	2.37		40.5	-1.10	5.67 H	4	EN
JC7JMT	46.9	0.83	3.03		48.9	1.53	1.40	4	XX
JGLQAT	39.0	-1.21	3.94	H	42.4	-0.52	2.54	4	LD
VG3AWL	39.3	-1.12	1.69		41.1	-0.91	1.57	4	TS
XENR2Z	159.2	29.93 X	7.57	H	158.4	36.12 X	3.46	4	LD
Y6H7CD	46.9	0.85	2.22		45.1	0.34	1.72	4	EX

Consensus (All Labs) Results

Month Mean	43.65	Grand Mean	44.02
Avg SD	2.37	Avg SD Months	2.72
SD btwn Labs	3.86	SD btwn Labs	3.17
Labs Incld	9	Labs Incld	9

Key to Instrument Codes Reported by Participants

EN	Emerson 2200	EX	Emerson (model not specified)
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
TS	TMI Digital Crush Tester, Model 17-56	XX	Instrument make/model not specified by lab

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4L4JRZ	43.0	-1.02	1.78		44.4	-0.71	1.08	4	CT
4QYAZW	47.9	0.31	2.09		50.4	0.94	2.95	4	XX
4VFHNW	39.8	-1.89	2.49		41.6	-1.48	1.93	4	IX
4VUCFD	46.1	-0.17	1.16		46.4	-0.16	4.00	4	LC
8R449T	31.3	-4.20 X	3.24	H	38.7	-2.29 *	8.22	H 4	XX
B3BQ84	40.4	-1.74	2.40		39.9	-1.97 *	2.04	4	LD
BBKHCR	50.2	0.93	0.46	L	52.2	1.44	1.45	4	LC
C36XTR	43.7	-0.83	1.11		44.0	-0.81	0.53	4	TS
CNNZNR	48.6	0.51	1.68		48.3	0.36	0.91	4	LC
DUBCZY	47.5	0.20	0.96		45.6	-0.38	1.73	4	EN
EDYHYW	43.9	-0.78	1.19		45.0	-0.54	1.52	3	EM
EYE4VX	48.0	0.34	0.61	L	48.6	0.45	0.77	4	EM
F8NUYZ	53.4	1.79	1.15		51.2	1.17	2.02	4	MK
FL92KK	41.5	-1.44	2.18		43.5	-0.98	2.08	4	LD
FLNTLW	99.4	14.33 X	4.32	H	74.6	7.65 X	35.07	2	XX
GJG47L	48.0	0.35	2.22		49.9	0.80	1.83	4	EM
J69QEY	49.1	0.64	1.35		49.5	0.69	0.35	L 4	TH
J9RFNG	49.3	0.68	2.02		48.5	0.42	0.77	4	TG
JGLQAT	42.7	-1.09	2.00		45.0	-0.54	1.54	4	LD
M4J6HQ	43.7	-0.83	1.12		45.1	-0.52	1.27	4	EM
MTNQKF	45.4	-0.37	0.99		45.6	-0.38	0.91	4	TL
N79TGD	43.5	-0.90	0.89		44.9	-0.59	1.47	4	LD
P8E6NL	52.9	1.68	1.33		53.9	1.91	1.16	4	LD
QKXFZA	51.0	1.15	1.82		52.2	1.44	2.18	4	TG
THZ989	42.7	-1.10	2.83	H	44.4	-0.71	1.28	4	EM
TP3PVF	53.0	1.70	1.25		53.1	1.69	2.02	4	EM
VG3AWL	44.5	-0.61	1.95		46.6	-0.11	2.13	4	TS
VM6NRG	46.0	-0.20	1.24		45.9	-0.30	1.41	4	LD
W24JFF	52.4	1.53	1.02		52.9	1.63	1.51	3	LD
W64234	43.9	-0.78	2.90	H	44.9	-0.59	0.83	4	TK
WDYYTC	51.1	1.18	0.62	L	50.0	0.84	1.30	3	LD
WEUL7F	47.7	0.24	1.55		47.0	0.00	0.86	4	LD
XQZNXB	45.6	-0.32	0.72	L	46.3	-0.18	0.52	4	BU
Y6H7CD	46.7	-0.01	1.65		45.3	-0.46	1.96	4	LY
Z4KN2H	48.2	0.38	2.69	H	46.6	-0.10	1.36	4	TU
ZN3MVW	48.5	0.48	1.22		47.0	0.02	1.18	4	EM

Consensus (All Labs) Results

Month Mean	46.75	Grand Mean	46.98
Avg SD	1.68	Avg SD Months	2.14
SD btwn Labs	3.67	SD btwn Labs	3.61
Labs Incld	34	Labs Incld	35

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
IX	Instron (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W 830
MK	Mark-10 ESM303	TG	TMI Digital Crush Tester, 17-76
TH	TMI Monitor/Compression Tester, Model 17-76	TK	TLS Compression Tester, Model 5184
TL	Tech-Lab Systems Compression	TS	TMI Digital Crush Tester, Model 17-56
TU	TMI Universal Crush Tester (TMI K440)	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42H3

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
3FMQ4V	116.4	117.2	115.6	118.8	117.0	0.31	6.6	1.4	117.1	0.53	5.8	2.1	13	AX
3FMQ4V_AL	116.5	No Data	121.2 L	118.0	118.6	0.62	5.6	2.4	111.0	-0.92	6.3	11.2 H	12	AL
3JQQF9	114.3	115.3	115.6	115.2 L	115.1	-0.07	5.0	0.6	115.4	0.13	5.8	1.0 L	16	AH
3Q73E9	114.4	113.0	112.4	110.2	112.5	-0.59	8.1	1.7	113.6	-0.29	8.9	3.2	16	ME
4L4JRZ	113.0	123.5	116.5	121.0	118.5	0.60	8.2	4.7	119.8	1.17	9.6	4.1	16	XX
4MJAUC	113.7	110.9 H	113.8	110.0	112.1	-0.67	8.8	2.0	108.8	-1.44	8.4	5.6	12	LC
6QFTH9	116.0	115.6	115.6	112.8	115.0	-0.09	10.7	1.5	112.5	-0.55	10.4	3.9	12	LZ
7KPV8Q	122.5	122.6	125.4	116.1 H	121.6	1.22	10.2	3.9	120.2	1.25	13.0	4.1	16	LJ
8EHWM9	112.6	111.2	115.0	118.3	114.3	-0.24	9.3	3.1	113.3	-0.37	9.3	3.5	16	XX
8WUEHQ_AL	106.6	110.2	109.8	107.5	108.5	-1.38	7.4	1.8	104.1	-2.55 *	6.6	9.3 H	16	XX
92NU8P_AL	120.6	No Data	117.7	No Data	119.2	0.73	7.2	2.1	115.8	0.22	6.8	2.3	12	AL
9YHAH6_AL	119.8	116.1	110.1	114.2	115.1	-0.08	10.5	4.1	115.3	0.11	10.7	2.9	12	XX
AU22U6_AL	122.6	121.3	126.9 *	121.8	123.1	1.52	6.5	2.6	123.7	2.07 *	7.3	2.2	16	AL
B2HWCK	104.7 *	107.8	108.1	110.7	107.8	-1.51	8.6	2.5	111.2	-0.86	7.8	4.4	13	LJ
B2HWCK_AL	128.4 *	121.7	124.8	121.7	124.2	1.72	7.3	3.2	116.3	0.34	11.9	11.9 H	13	AL
CNNZNR	113.1	110.6	108.5	111.4	110.9	-0.91	9.6	1.9	112.8	-0.50	8.4	2.7	16	AH
CR2ZKJ	114.8	109.4	109.0	112.6 H	111.5	-0.80	9.4	2.8	111.4	-0.82	9.3	2.4	16	LC
E246LX	122.2	No Data	118.6	121.6	120.8	1.06	6.4	1.9	120.5	1.32	5.6	3.2	13	AH
FL92KK	108.5	110.5	110.8	111.5	110.3	-1.02	9.1	1.3	110.3	-1.08	9.4	2.2	16	LZ
FLNTLW	115.3	113.4	122.4	114.0	116.3	0.16	9.1	4.1	117.1	0.53	9.7	4.3	16	LC
FVYV8X	120.2 L	121.2 L	120.2 L	120.7 L	120.6	1.01	2.9	0.5 L	118.1	0.76	3.1	3.5	16	AH
G3CVQK	113.9	111.1	115.0	113.9	113.5	-0.40	6.3	1.6	111.9	-0.70	6.4	4.2	16	LJ
GEPWMD_AI	123.9	125.2 *	129.9 *H	122.3	125.3	1.95 *	13.8	3.3	126.1	2.65 *	11.0	4.0	16	AL
JD36PD	113.6 H	110.7	116.7	114.3	113.8	-0.33	11.1	2.4	113.6	-0.31	10.3	3.5	16	LA
JGLQAT	120.9	117.8	110.4	118.8	117.0	0.30	9.6	4.6	116.7	0.44	8.8	3.0	16	LA
K8BJWG_AL	107.2	109.7 H	110.3	106.3	108.4	-1.40	12.8	1.9	112.0	-0.68	10.9	3.4	16	AL
KKF8ZR	111.4	102.1 *	111.4	107.5	108.1	-1.46	8.8	4.4	108.8	-1.44	8.5	3.2	16	LA
KM87EP	114.1	115.1	116.9	116.0	115.5	0.01	6.0	1.2	115.9	0.23	5.8	1.0 L	16	TP
KTQ22R	115.1	117.5	115.5	116.5	116.1	0.13	9.7	1.1	109.5	-1.27	8.6	12.0 H	16	TB
KXLTAP	117.2	116.6	111.7	117.0	115.6	0.03	6.5	2.6	119.4	1.06	6.1	3.2	16	LA
LFK9AF	126.8	122.0	125.4	117.0	122.8	1.45	9.5	4.4	121.3	1.53	10.3	4.1	16	LC
MM24QA_AL	113.2	113.3	116.5	111.2	113.6	-0.38	6.4	2.2	115.7	0.21	8.1	3.7	13	AL
N79TGD	113.6	116.8	113.6	107.2	112.8	-0.53	9.6	4.0	110.3	-1.07	8.8	3.3	16	AH
NQWMGU_A	111.2	113.5	112.7	111.2	112.1	-0.66	9.1	1.2	112.5	-0.56	9.2	3.8	16	AL
P4ELB7_AL	113.1	110.6	117.7	111.4	113.2	-0.45	9.9	3.2	115.0	0.03	10.5	3.4	16	AL

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42H3

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
P8E6NL	111.9	107.8	109.5	116.3	111.4	-0.81	6.2	3.7	109.7	-1.22	7.1	4.4	16	XX
QCMDEA_AI	117.8	116.2	116.2	115.7	116.5	0.20	9.8	0.9	117.8	0.69	9.6	2.8	16	AL
R6KNAA	117.7	115.2	117.6	109.1 L	114.9	-0.11	11.4	4.0	114.9	0.01	11.4	4.0	4	LA
RBRPLK_AL	105.3	111.1	108.6	104.4 *	107.4	-1.61	10.2	3.1	108.2	-1.57	9.3	2.8	16	AL
TDQRXK_AL	121.6 H	112.7	111.0	119.8	116.3	0.16	11.2	5.2	115.0	0.04	10.9	3.6	16	AL
TVBJWJ	107.8	108.5	113.9	109.8	110.0	-1.08	7.1	2.7	110.6	-1.02	8.4	4.5	16	LC
UEKZJA_AL	109.6	116.4	114.5	117.0	114.4	-0.22	8.7	3.4	114.4	-0.12	8.7	3.4	4	AL
UJQTD6	106.5 L	105.2 L	104.7 *L	107.4 L	106.0	-1.89	2.8	1.2	113.9	-0.23	4.1	5.5	16	LA
V77BHF	116.5	118.6	116.4	117.3	117.2	0.35	6.9	1.0	116.5	0.39	9.4	4.7	16	LB
VM6NRG	119.3	112.4	115.7	119.5	116.7	0.25	9.4	3.4	116.6	0.41	8.9	2.4	16	AH
VUQBEE	116.1	114.1	113.0	126.0 *	117.3	0.36	7.7	5.9	118.2	0.78	9.1	4.0	16	LC
VUQBEE_AL	118.7	119.9	114.3	120.0	118.2	0.54	10.3	2.7	117.6	0.64	9.8	2.8	16	AL
VY7J3D	128.3 *	129.9 X	128.8 *	127.7 *	128.7	2.62 *	8.6	0.9	130.2	3.63 X	8.7	2.8	16	AX
W24JFF	121.5	109.7	111.9	111.7	113.7	-0.35	7.3	5.3	114.2	-0.15	6.7	4.4	12	LA
WEUL7F	118.9	117.1	113.1	121.7	117.7	0.44	9.9	3.6	115.1	0.06	9.3	3.2	16	LA
X24CY2_AL	No Data	114.8	118.2	123.4	118.8	0.66	7.6	4.3	116.6	0.40	8.1	3.1	11	AL
XENR2Z	95.0 X	104.3 *	105.5	103.6 *	102.1	-2.65 *	9.0	4.8	106.9	-1.88	9.1	7.8	16	LA
Y6H7CD	125.5	125.5 *	121.2	119.6	123.0	1.49	10.2	3.0	122.7	1.85	9.6	3.5	16	AX
Y9WC2E	116.1	114.4	115.5	115.9	115.5	0.00	5.0	0.8	115.6	0.17	5.2	0.7 L	16	LA
YG874F	123.9	113.5	120.4	120.7	119.6	0.82	7.5	4.4	116.1	0.30	9.1	3.9	12	LA
YG874F_AL	118.1	118.7	121.5	112.5	117.7	0.44	7.6	3.7	117.4	0.59	7.1	3.4	12	AL
YMZ6JW	120.3	117.4	112.0	121.7	117.8	0.47	9.0	4.3	117.8	0.70	9.0	4.3	4	XX

Consensus (All Labs) Results

Wk Mean	116.23	114.47	115.52	115.35	Month Mean	115.46	Grand Mean	114.88
Avg SDr	8.17	8.84	9.11	8.59	Avg SD	8.66	Avg SD	8.74
SD btwn Labs	5.71	5.17	5.55	5.49	SD btwn Labs	5.04	SD btwn Labs	4.24
Labs Incld	55	53	57	56	SD btwn Wks	3.12	SD btwn Wks	4.62
Labs Excld	1	1	0	0	Labs Incld	57	Labs Incld	56
Labs not Rcvd	1	3	0	1				

Key to Instrument Codes Reported by Participants

AH	Perkins Model AH	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)
ME	Messmer Automatic Burst Tester ME-06	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
3FMQ4V	111.0	111.0	112.6	112.2 L	111.7	0.33	6.0	0.8	112.6	0.54	6.4	1.3	7	AH
3FMQ4V_AL	104.7	No Data	103.5	112.1	106.8	-1.04	10.5	4.7	108.7	-0.59	10.3	4.0	6	AL
3JQQF9	114.3	111.9	112.1	101.0 H	109.8	-0.19	16.9	6.0	112.8	0.58	12.8	5.0	8	AH
3Q73E9	108.4	114.1	109.4	110.0	110.5	-0.01	9.7	2.5	109.4	-0.38	10.5	2.2	8	LA
4L4JRZ	115.0	108.0	114.0	117.0	113.5	0.83	13.1	3.9	110.4	-0.09	12.2	4.9	8	XX
4MJAUC	105.6	103.4	106.1	102.6 L	104.4	-1.69	8.2	1.7	104.4	-1.83	8.2	1.7	4	LC
6QFTH9	117.4	112.3	123.2 *	109.5	115.6	1.41	10.3	6.0	114.9	1.20	9.8	5.5	8	LZ
7KPV8Q	102.4	104.0	116.3	111.0	108.4	-0.58	13.7	6.5	108.3	-0.70	14.7	4.7	8	LZ
8EHWM9	112.9	112.5	114.2	110.4	112.5	0.55	8.9	1.6	109.8	-0.27	10.4	3.5	8	XX
8WUEHQ_AL	107.9	108.5	105.5	103.3	106.3	-1.17	9.5	2.4	105.8	-1.44	8.5	2.1	8	XX
92NU8P_AL	109.0	No Data	106.0	No Data	107.5	-0.85	9.2	2.1	106.2	-1.31	10.9	2.9	6	AL
9YHAH6_AL	109.1	105.1	102.3	105.3	105.4	-1.41	13.0	2.8	105.4	-1.54	13.0	2.8	4	XX
AU22U6_AL	119.8	111.6	120.0	114.0	116.3	1.61	9.5	4.2	117.7	2.01 *	9.3	3.4	8	AL
B2HWCK	117.4	108.2	111.9	109.0	111.6	0.31	9.1	4.2	111.4	0.18	9.0	4.1	8	LA
B2HWCK_AL	106.1	106.9	107.5	106.9	106.9	-1.02	9.5	0.6 L	111.5	0.23	8.6	7.1	8	AL
CNNZNR	101.7	110.0	110.5	108.6	107.7	-0.78	11.4	4.1	107.6	-0.91	11.6	4.3	8	AH
CR2ZKJ	108.5	111.3	109.7	101.8	107.8	-0.75	8.0	4.2	108.5	-0.65	9.0	3.5	8	LA
E246LX	112.6 L	No Data	105.0	111.6	109.7	-0.22	5.9	4.1	111.1	0.09	8.0	4.5	6	AH
FL92KK	109.1	111.8	102.7	107.8	107.8	-0.74	11.4	3.8	108.3	-0.72	11.4	2.8	8	LZ
FLNTLW	119.6	103.1	113.1	102.9	109.7	-0.23	10.8	8.2 H	110.3	-0.13	10.7	6.1	8	XX
FVYV8X	127.8XL	127.0XL	127.3XL	127.0XL	127.3	4.65 X	3.2	0.4 L	129.5	5.42 X	3.4	2.4	8	AH
G3CVQK	109.2	114.3	108.2	111.2	110.7	0.06	8.9	2.7	112.8	0.59	7.7	2.9	8	LJ
GEPWMD_AI	113.2	111.7	112.2	114.4	112.9	0.66	9.6	1.2	112.5	0.52	9.6	4.4	8	AL
JD36PD	116.7	104.1	103.5	116.1	110.1	-0.12	13.4	7.3	109.0	-0.50	13.2	5.2	8	LA
JGLQAT	111.3	123.1 *	109.7	115.6	114.9	1.22	10.2	6.0	114.2	0.99	9.7	4.8	8	LA
K8BJWG_AL	114.7	107.0	106.8	107.3	109.0	-0.43	13.1	3.8	110.7	-0.02	12.1	3.8	8	AL
KKF8ZR	106.7	108.3	103.6	109.6	107.1	-0.96	10.3	2.6	108.4	-0.69	10.4	3.3	8	LA
KM87EP	111.8	112.5	110.4	111.7	111.6	0.30	6.9	0.9	113.6	0.83	6.3	2.2	8	TP
KTQ22R	116.2	114.3	110.3	106.0	111.7	0.33	8.3	4.5	114.8	1.16	10.4	6.3	8	TB
KXLTAP	107.3	113.6	111.0	115.7	111.9	0.38	8.5	3.6	113.1	0.67	8.2	3.2	8	LA
LFK9AF	111.8	111.9	119.2 H	107.4	112.6	0.58	16.6	4.9	113.5	0.79	14.9	4.2	8	LC
MM24QA_AL	106.3	105.9	109.7	105.3 L	106.8	-1.04	7.5	2.0	109.6	-0.34	8.1	3.8	7	AL
N79TGD	105.2	110.8	106.6	108.4	107.8	-0.77	10.8	2.4	107.6	-0.92	11.9	2.9	8	AH
NQWMGU_A	111.7	113.3	109.2	108.3	110.6	0.03	12.5	2.3	109.1	-0.48	12.1	3.3	8	AL
P4ELB7_AL	109.1	107.0	113.8	107.8	109.4	-0.30	10.7	3.0	108.6	-0.64	12.1	3.8	8	XX

Containerboard Interlaboratory Testing Program

Analysis 206

Bursting Strength (Mullen), 52 lb Linerboard - 52J1

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
P8E6NL	104.1	111.0	103.5	112.2	107.7	-0.78	10.7	4.5	106.6	-1.20	9.3	3.6	8	XX
QCMDEA_AI	114.1	116.5	110.2	110.9	112.9	0.67	8.6	2.9	111.8	0.29	9.9	4.0	8	AL
R6KNAA	100.4 *	113.3 H	113.1	No Data	108.9	-0.44	17.0	7.4	108.9	-0.53	17.0	7.4	3	LA
RBRPLK_AL	101.8	101.8 *	107.5	99.7 *	102.7	-2.17 *	12.5	3.3	103.5	-2.11	*11.7	3.3	8	AL
TDQRXK_AL	109.6 H	113.1	112.2	108.7	110.9	0.10	13.9	2.1	113.6	0.83	12.0	4.2	8	AL
TVBJWJ	111.1 L	115.2	115.5	108.8	112.6	0.59	6.7	3.3	111.6	0.26	8.6	3.0	8	LC
UEKZJA_AL	111.1	106.0	111.6	110.2	109.7	-0.22	12.2	2.5	109.7	-0.30	12.2	2.5	4	AL
UJQTD6	117.2 L	115.4 L	115.5 L	113.8 L	115.5	1.38	2.9	1.4	117.6	1.98	* 2.6	2.5	8	LA
V77BHF	118.4	118.8	116.3	119.6 *	118.3	2.16 *	9.1	1.4	114.9	1.21	10.8	6.1	8	LB
VM6NRG	116.5	116.6	119.7	115.3	117.0	1.81	12.3	1.9	114.9	1.19	10.8	3.1	8	AH
VUQBEE	106.7	111.9	109.4	109.3	109.3	-0.33	11.7	2.1	110.8	0.00	12.4	3.3	8	LC
VUQBEE_AL	110.5 H	110.9	113.6	110.1	111.3	0.21	13.4	1.6	111.3	0.16	13.4	2.9	8	XX
W24JFF	106.5	113.7	105.3	108.2	108.4	-0.58	14.0	3.7	110.3	-0.12	13.6	3.7	8	XX
WEUL7F	118.8	108.0	119.9	111.1	114.5	1.09	12.1	5.8	110.4	-0.12	10.8	5.9	8	LA
X24CY2_AL	No Data	112.7	99.0 *H	107.5	106.4	-1.13	19.9	6.9	107.3	-0.99	14.8	4.4	7	AL
XENR2Z	102.5	99.7 *	103.2	104.4	102.4	-2.24 *	11.4	2.0	102.4	-2.41	*12.4	2.3	8	LA
Y6H7CD	115.0	114.2	117.0	118.2	116.1	1.55	12.2	1.8	116.6	1.70	12.5	3.1	8	LA
Y9WC2E	110.4	112.6	110.5	111.1	111.2	0.18	7.1	1.0	111.2	0.14	8.9	1.1	8	LA
YG874F	108.9	120.5 *	112.9	119.6 *	115.5	1.38	9.1	5.5	115.5	1.37	9.1	5.5	4	LA
YG874F_AL	112.6	109.7	116.8	120.7 *	114.9	1.23	9.3	4.8	114.9	1.21	9.3	4.8	4	XX
YMZ6JW	113.6	117.8	111.1	117.3	114.9	1.23	11.2	3.1	114.9	1.21	11.2	3.1	4	XX

Consensus (All Labs) Results

Wk Mean	110.62	110.97	110.61	110.16	Month Mean	110.51	Grand Mean	110.75
Avg SDr	11.48	10.69	10.94	11.13	Avg SD	11.12	Avg SD	10.91
SD btwn Labs	4.96	4.72	5.22	4.84	SD btwn Labs	3.60	SD btwn Labs	3.46
Labs Incld	54	52	55	53	SD btwn Wks	3.93	SD btwn Wks	4.06
Labs Excld	1	1	1	1	Labs Incld	55	Labs Incld	55
Labs not Rcvd	1	3	0	2				

Key to Instrument Codes Reported by Participants

AH	Perkins Model AH	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

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42H3

TAPPI Official Test Method T822

Report #652
January 2024

	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
3M8QJ9	99.8	101.5 H	100.5	100.0	100.4	1.53	7.8	0.8	100.9	2.04 *	5.7	1.8	16	TU
3Q73E9	101.9	103.7 *	107.9 X	101.3	103.7	2.53 *	4.3	3.0	101.3	2.19 *	5.0	5.1	15	LX
4MJAUC	88.6 *	91.1	90.5	90.2	90.1	-1.61	3.0	1.1	91.1	-1.36	3.5	2.0	12	LZ
6QFTH9	95.0	96.6	89.0	78.8 X	89.9	-1.68	2.9	8.1 H	92.4	-0.91	3.2	5.8	12	LC
8PWLAW	101.5	97.2	100.7	97.8	99.3	1.18	4.2	2.1	98.4	1.17	3.9	1.7	16	MB
8WUEHQ	92.6 L	93.2	93.6	94.0	93.3	-0.63	2.9	0.6	92.1	-1.02	2.4	1.7	16	LD
B2DANY	97.1 L	94.7 L	95.0 L	94.8 L	95.4	0.00	1.1	1.2	96.1	0.37	0.7	1.7	16	MZ
BBKHCR	95.5	94.6	96.9	98.2	96.3	0.28	3.7	1.6	94.5	-0.18	3.3	2.5	16	LC
C74ANR	90.3	90.9	91.1	89.8 *	90.5	-1.48	3.1	0.6	89.2	-2.06 *	3.9	3.1	16	EM
CNNZNR	97.0	94.6	95.7	95.1	95.6	0.06	2.6	1.0	95.3	0.09	2.5	1.5	16	LC
CR2ZKJ	93.3	92.8 L	92.4	92.6	92.8	-0.79	2.8	0.4 L	92.7	-0.82	2.5	1.1	16	LD
DUBCZY	94.3 L	93.2	93.4	94.9	94.0	-0.43	2.7	0.8	94.6	-0.15	2.8	1.5	16	EN
EYE4VX	94.5 L	97.0	96.7	96.1	96.1	0.21	3.7	1.1	97.2	0.75	3.4	2.0	16	EM
FL92KK	97.2	92.5	92.8 L	92.7	93.8	-0.48	3.7	2.3	95.5	0.17	3.1	1.9	16	LD
FLNTLW	100.2	101.1	101.6	96.1	99.8	1.33	3.5	2.5	99.4	1.52	3.4	2.2	16	MB
FVYV8X	93.6 L	93.2 L	93.4 L	93.5	93.4	-0.59	1.7	0.2 L	93.5	-0.52	2.0	0.7 L	16	LD
G3CVQK	94.6	95.9	95.1 L	95.8 L	95.3	-0.01	2.5	0.6	94.0	-0.38	2.7	1.4	16	LD
GEPWMD	93.0	95.6	96.4	98.1	95.8	0.12	3.6	2.2	91.0	-1.42	5.9	10.8 H	16	LZ
JGLQAT	94.9 L	94.8 L	94.1	93.9 L	94.4	-0.29	2.1	0.5	94.9	-0.05	2.4	1.4	16	LD
K8BJWG	67.8 X	66.6 X	68.2 X	66.7 X	67.3	-8.52 X	5.8	0.8	69.1	-9.08 X	7.7	1.9	16	LD
KM87EP	97.0	95.9	99.3	98.3	97.6	0.67	2.8	1.5	96.3	0.43	3.2	2.2	16	TH
KTQ22R	92.1	90.4	91.9	86.1 X	90.1	-1.60	3.3	2.8	92.7	-0.82	3.4	2.6	16	LD
KXLTAP	88.1 *	86.7 *	86.3 *	89.7 *	87.7	-2.33 *	4.3	1.5	90.6	-1.57	3.4	3.6	16	LC
LFK9AF	95.2	93.1	93.5	95.7	94.4	-0.31	2.5	1.3	94.6	-0.17	2.5	1.3	16	LD
P4ELB7	102.2 *	102.5 *	101.7	100.2	101.6	1.89	3.3	1.0	100.5	1.93 *	2.8	1.5	16	LD
QKXFZA	97.3	95.3	95.5 L	95.9	96.0	0.19	2.5	0.9	96.0	0.34	2.8	1.4	16	TH
T9BKAK	95.1	96.8	95.0	93.5	95.1	-0.09	3.2	1.4	95.2	0.07	3.5	3.7	12	LD
TDQRXK	97.5	92.5	94.5	100.5	96.3	0.26	4.5	3.5	96.0	0.34	3.8	2.3	16	LD
TVBJWJ	89.0	95.4 L	94.0	97.7	94.0	-0.42	3.5	3.7	94.3	-0.27	3.7	2.7	16	LD
UEKZJA	96.0	95.1 L	94.2 L	97.1	95.6	0.06	2.2	1.2	95.6	0.19	2.2	1.2	4	LD
UJQTD6	93.4	92.8	94.1	93.3	93.4	-0.60	2.5	0.5	95.9	0.30	1.8	2.8	16	TU
V77BHF	95.6	92.4	96.5	97.4	95.5	0.03	4.6	2.2	96.9	0.64	3.5	2.7	16	LD
VM6NRG	95.4	93.4	96.1	96.1	95.2	-0.04	2.9	1.3	94.2	-0.30	2.8	1.6	16	LD
VUQBEE	93.4	96.9	106.8 X	92.7	97.5	0.63	2.9	6.5 H	91.6	-1.21	3.3	5.5	16	LD
VY7J3D	75.9 X	78.1 X	131.1 X	137.7 X	105.7	3.13 X	5.2	33.3 H	94.2	-0.30	3.8	16.5 H	16	LD

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42H3

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
W64234	96.0 L	95.5 L	95.5 L	95.0 L	95.5	0.03	1.7	0.4 L	95.0	-0.02	1.7	0.4 L	16	MB
X24CY2	98.6	98.8	98.7	98.6	98.7	1.00	2.9	0.1 L	97.4	0.83	4.0	2.2	16	LC
XENR2Z	94.3 H	99.8 H	96.2 H	96.0 H	96.6	0.36	22.3	2.3	90.8	-1.47	19.2	4.7	16	LB
Y6H7CD	96.9 L	94.8 L	98.9	91.6	95.5	0.04	2.0	3.1	94.6	-0.15	2.3	2.1	16	LG
YG874F	96.0	96.0	94.2 L	97.3	95.9	0.15	3.0	1.3	95.7	0.22	3.0	1.5	12	LD
Z4Z8LF	91.1 L	93.4 L	93.8 L	93.4 L	92.9	-0.75	1.4	1.2	94.5	-0.18	1.8	1.6	12	RS
ZXDPGX	101.6	98.6	102.6 *	99.9	100.7	1.61	3.2	1.8	100.0	1.74	3.1	1.5	16	LD

Consensus (All Labs) Results

Wk Mean	95.42	95.25	95.30	95.64	Month Mean	95.39	Grand Mean	95.03
Avg SDr	4.68	5.05	5.06	4.54	Avg SD	4.80	Avg SD	4.41
SD btwn Labs	3.47	3.40	3.48	2.98	SD btwn Labs	3.29	SD btwn Labs	2.85
Labs Incld	40	40	38	38	SD btwn Wks	2.35	SD btwn Wks	3.97
Labs Excld	2	2	4	4	Labs Incld	40	Labs Incld	41
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
LB	L&W Crush Tester 240	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	MZ	Messmer Buchel (model not specified)
RS	Regmed Digital Crush Tester CT-2000	TH	TMI Compression Tester, Model 17-76
TU	TMI Universal Crush Tester (TMI K440)		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
3M8QJ9	131.2	129.8 H	129.1	129.3	129.9	0.66	4.8	0.9	129.0	0.44	4.8	1.1	8	TU
3Q73E9	127.5 H	143.6 X	136.5 *	138.5 *	136.5	2.43 *	7.6	6.7	136.1	2.45 *	6.8	5.2	7	LY
4MJAUC	122.2	126.6	124.1	122.7	123.9	-0.93	3.0	2.0	123.9	-0.99	3.0	2.0	4	LZ
6QFTH9	119.9 H	128.4	122.7	107.6 X	119.7	-2.06 *	7.5	8.8 H	122.0	-1.54	6.1	6.4	8	LC
8PWLAW	130.0	125.5	127.7	134.8	129.5	0.56	4.1	4.0	129.7	0.64	4.6	4.0	8	MB
8WUEHQ	122.2	122.4	124.6	122.1	122.8	-1.23	4.9	1.2	123.0	-1.25	4.7	1.5	8	LD
B2DANY	128.3 L	130.9 L	132.0 L	133.8 L	131.2	1.03	0.9	2.3	128.1	0.20	0.7	3.6	8	MZ
BBKHCR	125.2	124.1	123.7	122.1	123.8	-0.97	3.8	1.3	124.2	-0.91	3.6	1.8	8	LC
C74ANR	121.2	123.2	121.5	121.6	121.9	-1.48	4.9	0.9	119.0	-2.37 *	4.7	3.2	8	EM
CNNZNR	129.6	128.7	129.6	128.9	129.2	0.47	3.4	0.5 L	128.7	0.36	3.4	1.7	8	LC
CR2ZKJ	124.4	124.9	127.4	125.0	125.4	-0.52	4.1	1.3	125.6	-0.53	3.7	1.3	8	LD
DUBCZY	124.8	129.1	128.4	127.3	127.4	0.00	4.2	1.9	128.0	0.17	3.9	2.5	8	EN
EYE4VX	125.2	124.6	126.7	125.0	125.4	-0.54	3.4	0.9	125.7	-0.49	3.2	0.9 L	8	EM
FL92KK	125.7	127.3	127.2	125.7	126.5	-0.25	3.9	0.9	128.0	0.16	3.8	1.9	8	LD
FLNTLW	131.9	132.0	118.7 *H	117.2 *H	124.9	-0.66	10.1	8.1	125.5	-0.54	7.9	5.4	8	MB
FVYV8X	121.7 L	121.9	121.4	121.3	121.6	-1.55	2.7	0.3 L	121.7	-1.62	2.5	0.8 L	8	LD
G3CVQK	127.6	127.7	126.7	124.8	126.7	-0.18	4.7	1.3	124.8	-0.75	4.1	2.4	8	LD
GEPWMD	123.7	136.8 *	137.3 *	101.6 XH	124.8	-0.69	6.9	16.7 H	125.9	-0.43	7.5	13.8 H	8	LZ
JGLQAT	127.9	129.9	126.7	128.4	128.2	0.22	3.4	1.3	128.0	0.16	3.5	1.4	8	LD
K8BJWG	82.8 XH	81.9 XH	80.6 XH	80.9 XH	81.6	-12.23 X	10.5	1.0	81.8	-12.88 X	11.2	0.9 L	8	LD
KM87EP	127.5	126.4	127.8	128.2	127.5	0.02	4.1	0.8	125.1	-0.65	3.8	2.9	8	TH
KTQ22R	122.5	121.9	128.8	129.1	125.6	-0.48	3.5	3.9	126.6	-0.24	4.3	3.6	8	LD
KXLTAP	117.8 *	125.7	124.0	123.2	122.7	-1.26	2.7	3.4	124.7	-0.76	4.1	3.7	8	LC
LFK9AF	131.0	125.2	125.2	127.5	127.2	-0.04	2.8	2.8	126.5	-0.28	2.8	3.0	8	LD
P4ELB7	134.2	133.6	130.7	130.9	132.4	1.32	3.5	1.8	133.4	1.70	3.3	1.8	8	LD
QKXFZA	124.2	124.6	121.9	125.1 H	123.9	-0.92	5.0	1.4	125.3	-0.60	4.3	1.9	8	TH
T9BKAK	130.8	129.4	128.4	129.2	129.4	0.54	4.3	1.0	129.4	0.57	4.3	1.0 L	4	LD
TDQRXK	130.5	132.4	131.6	132.7	131.8	1.17	4.0	1.0	130.3	0.82	3.7	1.9	8	LD
TVBJWJ	129.1	125.6	128.3	133.7	129.2	0.47	5.0	3.4	130.1	0.76	5.1	3.0	8	LD
UEKZJA	125.4	127.1	127.6	128.5	127.1	-0.07	2.5	1.3	127.1	-0.08	2.5	1.3	4	LD
UJQTD6	128.5	127.8	129.8 L	128.8	128.7	0.35	2.5	0.8	127.0	-0.12	1.8	1.9	8	TU
V77BHF	128.7	127.4	129.3	128.6	128.5	0.29	4.6	0.8	129.1	0.46	4.6	1.6	8	LD
VM6NRG	125.1	124.0	126.7	128.2 L	126.0	-0.37	2.8	1.8	125.2	-0.62	3.1	1.6	8	LD
VUQBEE	123.9	132.6	140.5 X	124.4	130.4	0.79	5.4	7.9	128.9	0.41	5.2	5.5	8	LD
W64234	127.3 L	126.7 L	126.1 L	126.2 L	126.6	-0.22	1.7	0.5 L	130.9	0.98	1.7	4.6	8	MB

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 52 lb Linerboard - 52J1

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
X24CY2	135.3 *	136.7 *	134.9	138.1 *	136.3	2.36 *	4.6	1.5	136.0	2.43 *	4.3	2.1	8	LC
XENR2Z	104.4XH	99.7 XH	94.0 XH	101.3 XH	99.8	-7.36 X	20.7	4.3	95.4	-9.04 X	19.0	6.0	8	LB
Y6H7CD	126.9	128.6	133.0	129.9	129.6	0.59	4.0	2.6	127.5	0.02	3.7	3.0	8	LY
YG874F	128.4	130.3	127.4	127.6	128.4	0.27	4.0	1.3	128.4	0.28	4.0	1.3	4	LD
Z4Z8LF	124.2	123.2	125.0	126.5	124.7	-0.72	2.3	1.4	129.1	0.46	2.4	4.9	8	RS
ZXDPGX	136.1 *	130.0	133.4	133.5	133.2	1.56	3.8	2.5	132.0	1.29	3.9	2.2	8	LD

Consensus (All Labs) Results

Wk Mean	126.85	127.71	127.67	127.80	Month Mean	127.40	Grand Mean	127.43
Avg SDr	4.99	3.86	4.12	4.43	Avg SD	4.46	Avg SD	4.23
SD btwn Labs	4.11	3.73	4.12	4.65	SD btwn Labs	3.75	SD btwn Labs	3.54
Labs Incld	39	38	38	37	SD btwn Wks	4.08	SD btwn Wks	3.69
Labs Excld	2	3	3	4	Labs Incld	39	Labs Incld	39
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
LB	L&W Crush Tester 240	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
MZ	Messmer Buchel (model not specified)	RS	Regmed Digital Crush Tester CT-2000
TH	TMI Compression Tester, Model 17-76	TU	TMI Universal Crush Tester (TMI K440)

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42H3

TAPPI Official Test Method T826

Report #652
January 2024

	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
3FMQ4V	25.5	24.4	24.4	24.7	24.8	0.81	1.7	0.5	24.3	0.51	1.8	0.5	13	LU
3FMQ4V_AL	24.4 L	No Data	23.7	24.0	24.0	0.22	1.4	0.3	23.6	-0.13	1.4	0.6	12	AL
3M8QJ9	25.4	25.2	25.1	23.9	24.9	0.93	1.9	0.7	24.8	1.02	1.9	0.5	16	LA
3Q73E9	24.7	25.0	19.9 X	24.2	23.4	-0.25	2.2	2.4 H	23.6	-0.16	2.0	1.7	15	LZ
4MJAUC	25.9 L	24.8 L	26.7 *	25.6	25.8	1.61	1.6	0.8	25.0	1.22	1.5	1.0	12	LA
4QYAZW	21.8	23.5	23.6 L	23.4	23.1	-0.53	2.1	0.9	23.8	0.03	1.9	0.9	16	LA
6QFTH9	19.4 X	24.6	21.4	17.0 XL	20.6	-2.50 *	1.3	3.2 H	21.1	-2.60 *	1.5	1.9	12	LY
7KPV8Q	24.3	23.4 H	25.4	23.8	24.2	0.40	2.3	0.9	24.3	0.54	2.2	0.7	16	LH
8EHWM9	23.2	22.1	21.8	22.5	22.4	-1.07	1.8	0.6	22.3	-1.49	1.6	0.5	16	LH
8PWLAW	24.5 L	24.3	23.4	23.2	23.9	0.10	1.7	0.6	23.6	-0.19	1.7	0.9	16	LA
8R449T	25.1	24.7	24.3	24.7	24.7	0.77	1.7	0.3	24.2	0.41	1.6	1.1	16	XX
8WUEHQ_AL	23.6	23.0	23.8	23.9 H	23.6	-0.14	2.1	0.4	23.6	-0.13	2.0	0.6	16	XX
92NU8P	22.8	23.3 L	23.4	No Data	23.2	-0.46	1.5	0.3	24.0	0.25	1.7	1.2	12	LU
9YHAH6_AL	21.3 *L	25.2 L	22.9	24.2 L	23.4	-0.29	1.2	1.7	24.6	0.84	1.2	1.4	12	XX
AU22U6_AL	22.8 L	23.5 L	23.3	24.2	23.5	-0.22	1.3	0.5	23.7	-0.08	1.7	0.8	16	AL
B2HWCK	22.8 L	21.5 L	21.7 L	22.2	22.1	-1.35	1.1	0.6	22.6	-1.11	1.5	1.1	13	LH
B2HWCK_AL	22.4 L	21.3 *L	22.0 L	21.3 *L	21.8	-1.59	0.9	0.5	22.2	-1.53	1.1	1.3	13	AL
B3BQ84	24.0 L	24.7	23.8	23.6	24.1	0.25	1.9	0.5	24.1	0.32	1.8	0.6	16	LH
CNNZNR	22.6	23.4	23.5	22.9	23.1	-0.52	1.8	0.4	23.1	-0.63	1.8	0.4	16	LU
CR2ZKJ	23.0 H	22.5 H	22.8 H	24.3 H	23.2	-0.46	7.9	0.8	23.1	-0.60	6.5	0.6	16	LA
DUBCZY	22.4	22.3	22.6	22.6 L	22.4	-1.04	1.3	0.1 L	22.3	-1.43	1.6	0.5	16	LY
E246LX	27.2 *	No Data	25.9	26.1 *	26.4	2.13 *	2.0	0.7	25.7	1.95 *	1.9	0.7	13	LU
FL92KK	23.1 L	23.1	19.5 X	23.4	22.3	-1.17	1.8	1.9 H	23.4	-0.34	1.8	1.1	16	LY
FLNTLW	25.4 L	24.7	24.6	24.8	24.9	0.91	1.8	0.4	24.5	0.79	1.8	0.8	16	LA
GEPWMD_AI	22.9 L	22.0	22.1 L	22.8	22.4	-1.04	1.3	0.4	22.8	-0.98	1.5	0.7	16	AL
JD36PD	23.9	24.4	24.3	24.4	24.2	0.39	1.7	0.2	23.5	-0.24	1.9	0.7	16	LY
JDMFET	22.6 L	22.8	22.3	22.8	22.6	-0.89	1.5	0.3	23.1	-0.64	1.5	0.7	16	LH
JGLQAT	23.5	23.3	23.2	23.0	23.3	-0.38	1.7	0.2	23.1	-0.60	1.7	0.3 L	16	LZ
JVLRMU	23.9	24.2 L	25.6	24.0	24.4	0.56	1.5	0.8	24.2	0.41	1.7	0.7	16	LA
K8BJWG	21.8	22.7	22.5	22.0	22.2	-1.19	1.9	0.4	22.4	-1.31	2.0	0.4	16	LY
K8BJWG_AL	23.1	23.1	23.5	23.8	23.4	-0.28	1.8	0.4	23.4	-0.32	1.7	0.5	16	AL
KKF8ZR	24.2	24.5	24.5	24.5	24.4	0.53	1.9	0.2 L	24.5	0.74	2.0	0.4	16	LH
KTQ22R	25.0	24.6	23.8	24.3	24.4	0.53	2.2	0.5	24.0	0.25	2.2	0.7	16	LW
KXLTAP	24.4	23.9	24.3	23.9	24.1	0.31	1.6	0.3	24.1	0.38	1.7	0.4	16	LA
LFK9AF	24.0 L	22.4	22.6	22.5	22.9	-0.68	1.6	0.8	23.3	-0.43	1.6	0.6	16	LA

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42H3

TAPPI Official Test Method T826

Report #652
January 2024

	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
NQWMGU_A	30.1 X	31.3 X	29.7 X	29.5 X	30.1	5.09 X	2.5	0.8	29.3	5.52 X	2.2	1.5	16	AL
P4ELB7_AL	23.9	23.2	23.9	22.7 L	23.4	-0.26	1.8	0.6	23.5	-0.24	1.6	0.8	16	AL
PPXYDP	24.9	25.6 L	24.7	25.0	25.0	1.04	1.4	0.4	25.1	1.32	1.3	0.3 L	16	LH
QCMDEA_AI	26.8 *	26.8 *	26.3	27.7 X	26.9	2.51 *	2.0	0.6	26.1	2.30 *	1.8	0.9	16	AL
R6ZECM	25.6	25.0	23.9	25.4	24.9	0.96	1.8	0.8	24.3	0.51	1.6	0.7	16	XX
RBRPLK_AL	24.8	24.2	24.1	23.5	24.2	0.33	2.0	0.5	23.9	0.11	1.9	0.7	16	AL
TDQRXK_AL	24.1	23.7	23.8	23.6	23.8	0.05	1.7	0.2	24.0	0.22	1.6	0.3	16	AL
TVBJWJ	24.4	25.1	24.9	22.9 L	24.3	0.48	1.6	1.0	23.9	0.15	1.7	1.0	16	LA
UEKZJA_AL	23.4	22.7	22.3	22.9	22.8	-0.73	1.9	0.5	22.8	-0.91	1.9	0.5	4	AL
UJQTD6	20.7 *	21.3 *	21.3 *	20.8 *	21.0	-2.17 *	1.8	0.3	128.0	103.61 X	1.8	190.8 H	16	XX
V77BHF	42.0 X	24.8 H	25.3	25.8	29.5	4.57 X	2.4	8.4 H	25.7	1.91	1.9	4.4 H	16	LU
VM6NRG	23.0	22.7	23.7	23.4	23.2	-0.41	1.7	0.4	23.2	-0.58	1.6	0.5	16	LU
VUQBEE	23.3 L	23.5	25.5	22.1	23.6	-0.11	2.0	1.4	21.9	-1.88	1.8	1.7	16	LZ
VUQBEE_AL	46.3 XL	44.8 XL	49.9 XL	44.8 XL	46.4	18.13 X	0.0	2.4 H	45.1	21.26 X	0.0	4.5 H	16	AL
VY7J3D	25.1 L	24.3	29.7 XH	25.8 H	26.2	1.99 *	2.2	2.4 H	24.6	0.89	1.8	1.5	16	LH
W24JFF	25.0	25.6	25.1	25.1	25.2	1.17	1.8	0.3	25.4	1.67	1.9	0.6	12	LA
X24CY2	No Data	23.3	24.7	23.8	23.9	0.13	2.0	0.7	23.7	-0.02	1.7	1.1	11	LU
XENR2Z	23.4	24.0	23.5	23.6	23.6	-0.10	2.5	0.3	23.9	0.17	2.2	1.1	16	LH
XMMNZJ	22.1 L	22.1	23.3 L	21.9	22.4	-1.10	1.9	0.7	22.2	-1.53	2.5	1.5	16	LH
Y6H7CD	24.9	24.3	24.9	23.1	24.3	0.45	1.6	0.9	23.8	0.08	1.7	0.7	16	BK
Y9WC2E	23.5	24.0	23.7	24.1	23.8	0.07	1.9	0.3	23.9	0.20	1.9	0.2 L	16	LZ
YG874F_AL	24.4	24.2	25.2	23.6	24.3	0.48	1.7	0.7	23.9	0.13	1.6	0.6	12	AL
ZQULAV	23.3	23.3	21.8	22.5	22.8	-0.79	1.9	0.7	22.7	-1.03	1.7	0.5	16	LW
ZXDPGX	26.0 L	25.4	26.2	25.2	25.7	1.56	1.8	0.4	25.6	1.82	1.8	0.6	16	LH

Consensus (All Labs) Results

Wk Mean	23.89	23.77	23.83	23.67	Month Mean	23.74	Grand Mean	23.74
Avg SDr	2.34	1.99	1.96	1.96	Avg SD	2.06	Avg SD	1.95
SD btwn Labs	1.34	1.18	1.31	1.15	SD btwn Labs	1.25	SD btwn Labs	1.01
Labs Incld	54	55	54	54	SD btwn Wks	0.90	SD btwn Wks	1.05
Labs Excld	4	2	5	4	Labs Incld	56	Labs Incld	56
Labs not Rcvd	1	2	0	1				

Key to Instrument Codes Reported by Participants

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)
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 52 lb Linerboard - 52J1

TAPPI Official Test Method T826

Report #652
January 2024

	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
3FMQ4V	34.7	35.3	35.1	33.9	34.7	0.91	2.3	0.6	34.2	0.80	2.5	0.8	7	LA
3FMQ4V_AL	35.3	No Data	32.0	32.4 L	33.2	0.04	1.6	1.8	33.0	0.05	1.6	1.5	6	AL
3M8QJ9	37.1 *	35.7	35.7	35.5	36.0	1.64	2.6	0.7	34.9	1.26	2.4	1.4	8	LA
3Q73E9	33.4	33.6	29.2 *	33.7	32.4	-0.42	2.4	2.2	32.7	-0.18	2.3	1.5	8	LZ
4MJAUC	36.5	36.8 *	37.4 *H	37.3 *	37.0	2.22 *	3.0	0.4	37.0	2.57 *	3.0	0.4	4	LA
4QYAZW	32.2	31.7 L	32.6	23.4 X	30.0	-1.86	2.0	4.4 H	31.3	-1.05	1.7	3.3 H	8	LA
6QFTH9	27.6 X	31.2	26.1 X	25.6 X	27.6	-3.23 X	1.9	2.5 H	29.4	-2.25 *	2.3	2.7 H	8	LW
7KPV8Q	33.3	32.6	34.7	33.3	33.5	0.19	2.7	0.9	33.4	0.30	2.6	0.6	8	LZ
8EHWM9	31.5	31.6	31.3	32.0	31.6	-0.91	2.0	0.3	31.4	-0.99	1.9	0.5	8	LH
8PWLAW	33.9	33.6 L	32.8	31.9	33.0	-0.07	1.7	0.9	32.8	-0.07	2.2	1.1	8	LA
8R449T	34.8	34.1	34.4	34.5	34.5	0.76	1.9	0.3	33.9	0.63	2.0	0.7	8	XX
8WUEHQ_AL	32.8	32.1	32.6	31.3	32.2	-0.57	2.1	0.6	32.5	-0.31	2.2	0.6	8	XX
92NU8P	32.8	32.1	31.7	No Data	32.2	-0.57	2.2	0.5	33.5	0.33	2.3	1.7	6	LU
9YHAH6_AL	35.1	35.3 L	34.8	36.1	35.3	1.24	1.6	0.6	35.3	1.49	1.6	0.6	4	XX
AU22U6_AL	31.9	25.2 XH	33.4 L	32.1	30.7	-1.46	4.1	3.7 H	31.7	-0.79	3.2	2.9 H	8	AL
B2HWCK	31.4	30.1 L	30.3	31.0	30.7	-1.44	1.9	0.6	31.5	-0.95	2.0	1.7	8	LH
B2HWCK_AL	30.6	29.8 L	29.0 *	29.8 *L	29.8	-1.96 *	1.4	0.7	30.4	-1.63	1.5	1.3	8	AL
B3BQ84	34.9	35.3 H	33.1	32.5	34.0	0.47	2.6	1.4	34.0	0.69	2.3	1.0	8	LH
CNNZNR	33.7	32.6	33.0	33.1	33.1	-0.05	2.0	0.5	33.1	0.07	2.3	0.7	8	LU
CR2ZKJ	34.2	32.5	33.2	33.4	33.3	0.09	2.5	0.7	32.9	-0.03	2.4	0.7	8	LW
DUBCZY	31.2	31.7	31.5 L	31.5	31.5	-0.99	1.9	0.2 L	31.4	-0.97	1.9	0.4 L	8	LZ
E246LX	36.8	No Data	35.5	36.7	36.3	1.83	2.8	0.7	35.7	1.71	2.6	0.9	6	LU
FL92KK	31.8	32.7	28.0 *	32.9	31.3	-1.06	2.3	2.3	32.2	-0.48	2.2	1.8	8	LZ
FLNTLW	34.6	35.1	35.9	33.9	34.9	0.98	2.4	0.8	34.4	0.89	2.4	0.8	8	LA
GEPWMD_AI	31.2	31.2	30.3	31.8	31.2	-1.17	2.1	0.6	31.2	-1.09	2.1	0.5	8	AL
JD36PD	33.7	34.0	33.2	33.3	33.5	0.22	2.6	0.4	32.8	-0.11	2.5	1.0	8	LU
JDMFET	31.1	32.4	31.0	31.0	31.4	-1.05	2.1	0.7	31.7	-0.81	2.1	0.9	8	LH
JGLQAT	32.6	34.2	33.4	33.2	33.3	0.09	2.0	0.7	32.8	-0.08	2.3	0.7	8	LZ
JVLRMU	36.2	36.6 *	34.7	35.7	35.8	1.53	2.5	0.8	35.1	1.39	2.4	1.0	8	LA
K8BJWG	30.6	31.0	31.2	30.6	30.9	-1.35	2.2	0.3	30.9	-1.34	2.3	0.3 L	8	LU
K8BJWG_AL	32.3	33.4	32.1	32.5	32.5	-0.36	2.3	0.6	32.6	-0.24	2.3	0.5	8	AL
KKF8ZR	35.4	33.6	35.0	34.7 H	34.7	0.87	2.6	0.8	34.2	0.77	2.6	0.8	8	LH
KTQ22R	34.3	34.1 H	33.5	33.8 H	33.9	0.43	3.1	0.3	33.8	0.55	3.1	0.9	8	LW
KXLTAP	34.4	33.7 H	36.6	33.5 L	34.6	0.80	2.5	1.4	34.8	1.15	2.3	1.0	8	LA
LFK9AF	32.5	31.7	32.8	32.7	32.4	-0.43	1.8	0.5	32.7	-0.17	2.0	0.8	8	LU

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 52 lb Linerboard - 52J1

TAPPI Official Test Method T826

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
NQWMGU_A	41.1 X	41.9 X	41.2 X	41.4 X	41.4	4.78 X	2.4	0.4	40.6	4.87 X	2.5	0.9	8	AL
P4ELB7_AL	32.2	32.6 L	33.6 L	35.2	33.4	0.14	1.5	1.4	33.1	0.12	2.0	1.1	8	XX
PPXYDP	35.8	36.1 L	36.7 L	36.2	36.2	1.75	1.5	0.4	34.9	1.25	2.1	1.4	8	LH
QCMDEA_AI	35.3 H	36.7 *	36.2	35.3	35.9	1.57	2.6	0.7	35.4	1.57	2.4	0.7	8	AL
R6ZECM	32.4	33.1	32.1	33.5	32.8	-0.24	2.2	0.6	33.5	0.35	2.1	1.0	8	XX
RBRPLK_AL	32.5	33.7	32.5	33.0	32.9	-0.14	2.2	0.6	33.2	0.14	2.2	0.7	8	AL
TDQRXK_AL	32.7	33.1	33.4	33.3	33.1	-0.04	2.1	0.3	33.3	0.24	2.2	0.5	8	AL
TVBJWJ	35.2	33.6	35.0	36.1	35.0	1.03	2.2	1.1	33.8	0.53	2.2	1.4	8	LA
UEKZJA_AL	32.5	32.3	31.8	32.1	32.2	-0.58	2.3	0.3	32.2	-0.50	2.3	0.3 L	4	XX
UJQTD6	29.2 *	30.2	30.3	30.1	30.0	-1.87	1.9	0.5	29.0	-2.50 *	2.0	1.1	8	XX
V77BHF	35.1	36.1	35.9	35.0	35.5	1.36	2.0	0.6	34.7	1.13	2.0	1.0	8	LU
VM6NRG	32.1	32.3	32.5	32.4	32.3	-0.50	2.2	0.2 L	31.8	-0.73	2.3	0.6	8	LU
VUQBEE	31.6	32.1	35.7 H	31.5	32.8	-0.24	2.4	2.0	31.3	-1.07	2.2	2.8 H	8	LZ
VUQBEE_AL	42.0 XL	40.3 XL	45.9 XL	36.8 *L	41.2	4.69 X	0.0	3.8 H	40.9	5.06 X	0.0	2.9 H	8	XX
W24JFF	34.4 H	33.3	33.7	32.6	33.5	0.19	2.5	0.8	30.9	-1.29	2.0	2.8 H	8	LA
X24CY2	No Data	33.3	33.4	34.2	33.6	0.25	2.4	0.5	33.9	0.57	2.4	0.6	7	LU
XENR2Z	33.6	33.7 H	33.5	33.7	33.6	0.27	2.6	0.1 L	32.3	-0.40	2.8	1.4	8	LH
XMMNZJ	32.3 L	30.8 L	31.6 H	33.3	32.0	-0.68	3.1	1.1	33.0	0.04	3.5	3.0 H	8	LH
Y6H7CD	34.3	33.9	34.7	32.3 L	33.8	0.36	2.1	1.0	33.8	0.52	2.4	0.8	8	BK
Y9WC2E	31.7	31.9	32.1	32.2	32.0	-0.69	2.6	0.2	31.6	-0.88	2.6	0.6	8	LZ
YG874F_AL	33.1	31.1	33.4 H	33.2	32.7	-0.28	2.7	1.1	32.7	-0.17	2.7	1.1	4	AL
ZQULAV	32.7	31.2	32.3	30.9	31.8	-0.81	2.2	0.9	31.6	-0.86	2.1	0.8	8	LW
ZXDPGX	34.9	33.9	33.7	34.0	34.1	0.57	2.2	0.6	34.3	0.83	2.3	0.6	8	LH

Consensus (All Labs) Results

Wk Mean	33.38	33.14	33.18	33.30	Month Mean	33.17	Grand Mean	32.96
Avg SDr	2.26	2.28	2.29	2.20	Avg SD	2.33	Avg SD	2.32
SD btwn Labs	1.75	1.75	2.02	1.75	SD btwn Labs	1.72	SD btwn Labs	1.57
Labs Incld	54	53	55	54	SD btwn Wks	1.17	SD btwn Wks	1.33
Labs Excld	3	3	3	3	Labs Incld	55	Labs Incld	56
Labs not Rcvd	1	2	0	1				

Key to Instrument Codes Reported by Participants

AL	L & W Autoline 400	BK	Buchel Strip Compression Tester BK-155
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)
LZ	L&W (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
3FMQ4V_AL	114.6	-1.60		20.97	134.6	-0.61	30.61 H	4	AL
3M8QJ9	139.7	-0.10		20.13	150.5	0.59	14.28	4	LA
6QFTH9	249.6	6.45	X	24.14	200.6	4.37 X	45.60 H	3	LS
7KPV8Q	126.2	-0.91		17.52	122.3	-1.53	8.99	4	LS
8PWLAW	157.8	0.98		18.10	145.1	0.19	11.50	4	LA
92NU8P	133.8	-0.45		11.21	157.7	1.14	21.50	3	EV
9YHAH6_AL	152.5	0.66		15.76	157.1	1.09	4.60	3	AL
AU22U6_AL	139.0	-0.14		7.72	120.2	-1.69	12.65	4	AL
B2HWCK_AL	124.8	-0.99		14.05	140.3	-0.17	26.37	4	AL
CR2ZKJ	138.9	-0.15		21.90	135.7	-0.52	3.75	4	LA
DUBCZY	136.4	-0.30		15.40	144.7	0.16	7.19	4	EV
FL92KK	153.5	0.72		11.74	149.6	0.53	5.45	4	EV
FLNTLW	157.2	0.94		23.84	154.1	0.86	6.23	4	LA
GEPWMD_AL	102.7	-2.31	*	15.03	117.1	-1.93 *	9.83	4	AL
JGLQAT	140.9	-0.03		10.83	137.1	-0.41	5.14	4	LS
JVLRMU	153.0	0.69		16.79	148.7	0.46	8.93	4	LA
K8BJWG	140.3	-0.07		11.65	149.0	0.48	16.61	4	XX
KKF8ZR	134.7	-0.40		15.78	135.5	-0.54	4.26	4	EV
KTQ22R	123.0	-1.10		11.61	124.4	-1.37	4.69	4	XX
KXLTAP	140.8	-0.04		13.73	150.1	0.57	9.48	3	EV
NQWMGU_AL	150.0	0.51		23.45	163.2	1.55	8.92	4	AL
QCMDEA_AL	130.0	-0.68		11.04	120.6	-1.66	6.39	4	AL
RBRPLK_AL	122.1	-1.15		19.22	155.7	0.99	22.69	4	AL
TDQRXK	139.3	-0.13		18.22	159.4	1.27	27.28	4	LS
TVBJWJ	159.8	1.10		13.21	135.4	-0.54	23.50	4	LA
VM6NRG	144.0	0.16		11.25	145.6	0.22	1.82 L	4	EV
VUQBEE	175.4	2.03	*	24.52	86.7	-4.21 X	99.81 H	4	LA
VUQBEE_AL	183.4	2.50	*	19.55	164.8	1.67	24.56	4	AL
X24CY2	151.7	0.61		21.32	142.0	-0.05	12.18	4	EV
Y9WC2E	144.2	0.17		12.76	142.2	-0.03	2.19 L	4	LS
YMZ6JW	133.0	-0.50		12.87	133.2	-0.71	8.36	4	LS

Consensus (All Labs) Results

Month Mean	141.42	Grand Mean	142.61
Avg SD	16.64	Avg SD Months	14.62
SD btwn Labs	16.77	SD btwn Labs	13.27
Labs Incld	30	Labs Incld	29

Key to Instrument Codes Reported by Participants

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 - 42H3

TAPPI Official Test Method T538

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4QYAZW	372.9	0.57	9.61		375.1	0.59	2.37	4	XX
8WUEHQ_AL	375.9	1.06	5.52		385.6	2.17 *	7.91	4	XX
9YHAH6_AL	376.7	1.20	9.36		376.4	0.80	1.12	3	XX
B2HWCK_AL	358.1	-1.87 *	3.67		363.7	-1.10	9.65	4	AL
C74ANR	366.1	-0.56	4.21		366.7	-0.64	7.52	4	TS
CNNZNR	374.2	0.78	9.43		376.6	0.82	4.20	4	XX
JGLQAT	374.2	0.79	8.84		377.3	0.93	2.08	4	XX
K8BJWG_AL	369.2	-0.04	5.35		364.7	-0.95	4.17	4	AL
P4ELB7_AL	371.3	0.30	6.62		375.6	0.67	3.71	4	AL
QCMDEA_AL	366.4	-0.50	7.41		362.7	-1.24	4.21	4	AL
RBRPLK_AL	358.3	-1.84	6.83		362.1	-1.34	2.82	4	AL
TDQRXK_AL	361.9	-1.25	5.28		367.6	-0.51	8.86	4	AL
UEKZJA	371.3	0.30	8.39		371.3	0.04	0.00	1	PP
VUQBEE_AL	374.2	0.78	4.85		368.3	-0.41	5.76	4	AL
W24JFF	412.7	7.14 X	1.34	L	413.3	6.28 X	0.60 L	3	LA
XENR2Z	342.5	-4.45 X	4.83		263.5	-15.96 X	156.67 H	4	LA
YG874F_AL	371.2	0.29	12.22	H	372.2	0.17	2.36	3	AL

Consensus (All Labs) Results

Month Mean	369.46	Grand Mean	371.05
Avg SD	7.54	Avg SD Months	5.45
SD btwn Labs	6.06	SD btwn Labs	6.74
Labs Incld	15	Labs Incld	15

Key to Instrument Codes Reported by Participants

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 - 42H
TAPPI Official Test Method T569

Report #652
January 2024

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV	SD		Mean	CPV	SD Months	Months	Inst
4QYAZW	115.6	-0.94	2.34	L	116.0	-0.97	0.43 L	4	SC
8WUEHQ	159.2	1.52	14.99		158.3	1.72	2.61	4	HY
CNNZNR	149.8	0.98	5.36		148.9	1.12	1.00 L	4	HY
CR2ZKJ	162.4	1.70	3.78		152.4	1.34	11.08	4	HY
FL92KK	98.6	-1.90 *	24.94	H	130.0	-0.08	22.31	4	HZ
GEPWMD	113.2	-1.08	7.50		112.5	-1.20	9.90	4	TM
K8BJWG	121.4	-0.62	2.30	L	120.5	-0.69	0.89 L	4	TM
KKF8ZR	138.6	0.35	11.46		135.8	0.29	3.50	4	TM
KXLTAP	120.6	-0.66	4.93		121.3	-0.64	1.69 L	4	TM
LFK9AF	136.0	0.21	9.14		134.0	0.17	3.85	4	HZ
P4ELB7	142.7	0.58	8.93		143.5	0.78	1.47 L	4	LZ
RBRPLK	152.6	1.14	21.87	H	144.8	0.86	20.73	4	TM
TDQRXK	112.9	-1.10	6.32		112.7	-1.18	8.40	4	TM
UEKZJA	145.6	0.75	10.64		145.6	0.91	0.00	1	HY
VM6NRG	128.6	-0.21	5.22		129.7	-0.10	1.28 L	4	TM
X24CY2	111.8	-1.16	5.63		111.2	-1.28	1.98 L	4	TM
XMMNZJ	135.0	0.15	7.75		105.7	-1.63	41.15 H	3	HY
YG874F	127.8	-0.26	5.13		127.3	-0.26	4.22	3	TM
YMZ6JW	142.2	0.56	2.28	L	144.3	0.83	2.03 L	4	HY

Consensus (All Labs) Results

Month Mean	132.34	Grand Mean	131.27
Avg SD	10.41	Avg SD Months	12.87
SD btwn Labs	17.72	SD btwn Labs	15.72
Labs Incld	19	Labs Incld	19

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	129.27	17.03	3.07	15
Modified Scott Bond Mechanics	151.61	9.99	19.27	3

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

	Monthly Results				Cumulative Results				
WebCode	Mean	CPV		SD	Mean	CPV		SD Months	Months
2EDYX9	22.6	-1.52		3.77	25.9	-0.66		2.19	4
3FMQ4V	31.2	1.12		0.84	30.9	1.13		1.71	4
4QYAZW	20.8	-2.08	*	0.84	22.0	-2.04	*	0.85	4
6QFTH9	28.6	0.32		1.34	29.1	0.48		0.64	3
7KPV8Q	21.4	-1.90		2.41	21.4	-2.23	*	0.99	4
8WUEHQ	32.2	1.43		2.59	29.5	0.64		1.89	4
AU22U6	21.2	-1.96	*	1.79	23.4	-1.53		3.04	4
CLW4YX	26.0	-0.48		1.58	26.2	-0.55		0.44	4
CNNZNR	24.2	-1.03		1.59	25.7	-0.73		1.79	4
CR2ZKJ	24.4	-0.97		2.41	24.8	-1.05		0.96	4
DUBCZY	28.5	0.30		1.80	29.1	0.48		3.74	4
E246LX	29.6	0.63		1.14	27.8	0.03		4.69 H	4
FL92KK	30.0	0.75		2.35	33.5	2.04	*	3.94	4
FLNTLW	29.2	0.51		3.70	27.8	0.04		1.73	4
GEPWMD	31.1	1.09		3.54	30.8	1.08		1.65	4
JGLQAT	33.1	1.71		3.01	31.8	1.45		2.57	4
K8BJWG	25.4	-0.66		2.19	27.4	-0.11		1.76	4
KKF8ZR	26.6	-0.29		5.98 H	28.1	0.15		1.62	4
KM87EP	26.2	-0.42		5.48	27.7	-0.01		1.11	4
KTQ22R	30.2	0.82		6.98 H	30.3	0.90		1.20	4
MM24QA	29.3	0.54		2.90	28.8	0.40		2.16	4
NQWMGU	26.0	-0.48		2.00	23.8	-1.40		3.63	4
P4ELB7	29.0	0.45		1.70	27.1	-0.22		2.22	4
QCMDEA	31.2	1.11		2.01	31.5	1.35		0.68	4
RBRPLK	29.6	0.63		3.51	30.0	0.79		0.93	4
TDQRXK	23.8	-1.16		2.39	24.6	-1.12		0.77	4
UEKZJA	29.8	0.69		4.32	29.8	0.74		0.00	1
VM6NRG	28.4	0.26		1.14	25.6	-0.75		3.30	4
VY7J3D	30.0	0.75		3.08	29.4	0.60		0.71	4
X24CY2	28.2	0.20		0.84	28.8	0.40		4.60 H	4
XMMNZJ	25.3	-0.71		0.50 L	26.7	-0.37		2.44	4
Y9WC2E	27.6	0.01		0.55 L	27.3	-0.16		0.55	4
YMZ6JW	28.6	0.32		1.14	28.3	0.21		0.26 L	4

Consensus (All Labs) Results

Month Mean	27.55	Grand Mean	27.71
Avg SD	2.90	Avg SD Months	2.26
SD btwn Labs	3.25	SD btwn Labs	2.82
Labs Incld	33	Labs Incld	33

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
3FMQ4V	35.6	1.70	2.22		34.6	1.52	1.62	4	GG
3FMQ4V_AL	31.0	-1.31	1.25		30.7	-1.65	2.54 H	4	AL
3M8QJ9	34.6	1.04	1.42		33.6	0.71	1.20	4	LA
6QFTH9	26.8	-4.03 X	2.53		25.3	-5.89 X	1.45	3	XX
7KPV8Q	22.2	-7.04 X	3.33		26.0	-5.31 X	3.70 H	4	TD
8PWLAW	34.2	0.74	3.20		32.6	-0.12	1.11	4	LA
8WUEHQ	31.5	-1.00	4.00	H	32.0	-0.57	1.05	4	TP
8WUEHQ_AL	31.7	-0.88	0.91	L	31.0	-1.33	1.73	4	XX
92NU8P_AL	32.6	-0.28	1.67		32.2	-0.41	0.97	4	AL
9YHAH6_AL	33.9	0.59	2.47		32.5	-0.22	1.76	3	XX
AU22U6_AL	30.7	-1.52	1.49		30.2	-2.00 *	0.35	4	AL
B2HWCK_AL	32.9	-0.07	1.45		33.2	0.36	1.66	4	AL
CLW4YX	32.3	-0.48	2.17		32.1	-0.53	1.24	4	TD
CNNZNR	34.8	1.15	3.62		34.4	1.30	0.85	4	TP
CR2ZKJ	32.6	-0.27	2.63		33.2	0.36	0.76	4	LP
E246LX	31.9	-0.75	1.25		33.6	0.71	1.33	4	GG
FL92KK	31.9	-0.72	1.62		32.4	-0.25	0.98	4	LP
FLNTLW	31.0	-1.33	1.92		31.2	-1.22	0.97	4	LA
FQKQKG	29.0	-2.58 *	1.57		30.3	-1.93 *	1.64	4	LP
GEPWMD_AL	31.6	-0.91	1.64		31.5	-0.96	1.06	4	AL
GW66NE	33.4	0.23	1.74		33.4	0.51	0.69	4	LP
JGLQAT	34.1	0.71	3.84		32.8	0.05	1.07	4	GA
JVLRMU	33.2	0.12	1.71		33.3	0.48	0.83	4	XX
K8BJWG	33.4	0.26	1.42		32.3	-0.31	0.88	4	LP
K8BJWG_AL	35.0	1.30	2.59		35.1	1.86	0.96	4	AL
KKF8ZR	31.8	-0.79	1.28		31.9	-0.67	0.82	4	LP
KTQ22R	34.4	0.88	1.83		34.7	1.55	0.67	4	LP
MM24QA_AL	33.4	0.22	1.52		33.4	0.51	0.46	4	AL
NQWMGU_AL	37.0	2.55 *	2.43		36.7	3.15 X	1.02	4	AL
P4ELB7_AL	33.3	0.16	1.44		33.6	0.67	1.31	4	AL
QCMDEA_AL	31.4	-1.05	3.69		30.9	-1.47	0.89	4	AL
RBRPLK_AL	32.5	-0.33	2.35		32.0	-0.57	0.79	4	AL
TDQRXK_AL	33.3	0.17	2.34		32.4	-0.28	0.76	4	AL
TVBJWJ	31.9	-0.72	2.15		33.4	0.55	1.66	4	LA
UEKZJA	35.3	1.49	3.62		35.3	2.05 *	0.00	1	TP
VM6NRG	35.2	1.40	4.21	H	33.8	0.82	1.58	4	GA
VUQBEE_AL	32.6	-0.25	3.25		31.8	-0.74	0.88	4	XX
W24JFF	31.9	-0.75	1.92		31.8	-0.77	0.08 L	3	LP
X24CY2_AL	33.4	0.25	2.77		33.2	0.38	0.73	4	AL

Containerboard Interlaboratory Testing Program

Analysis 237

Air Resistance, 42 lb Linerboard - 42H

TAPPI Official Test Method T460

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
XENR2Z	33.3	0.18	2.18	26.8	-4.70 X	14.83 H	4	LA
Y9WC2E	32.4	-0.40	2.17	32.3	-0.35	0.29	4	LP
YG874F_AL	34.6	1.00	3.02	33.3	0.49	1.11	3	AL
YMZ6JW	33.6	0.38	2.49	33.3	0.44	0.46	4	LP
ZXDPGX	32.8	-0.14	2.30	34.0	1.03	1.13	4	XX

Consensus (All Labs) Results

Month Mean	33.01	Grand Mean	32.73
Avg SD	2.41	Avg SD Months	1.15
SD btwn Labs	1.54	SD btwn Labs	1.26
Labs Incld	42	Labs Incld	40

Key to Instrument Codes Reported by Participants

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
3M8QJ9	59.6	57.7	55.9	59.1	58.1	0.12	4.0	1.6	60.3	0.98	4.0	1.8	16	TU
3Q73E9	60.8 H	59.0	60.2	63.0	60.8	1.21	3.9	1.7	60.5	1.06	4.1	1.9	16	LD
6Z6GFW	65.5 *	62.2	65.1 *	59.0	62.9	2.12 *	4.1	3.0	62.6	1.93	4.4	3.4	15	LD
72AL7Q	60.2	61.2	60.4	58.8	60.1	0.96	2.6	1.0	62.3	1.81	3.3	3.4	16	LC
8EHWM9	58.8	58.0	56.6	56.1	57.4	-0.18	3.1	1.2	57.4	-0.28	2.9	1.1	16	EM
8R449T	60.2 L	59.1 L	63.3 L	60.5 L	60.8	1.22	0.8	1.8	60.3	0.96	0.9	1.3	16	XX
8WUEHQ	57.9	58.7	55.7	57.4	57.4	-0.17	4.0	1.3	55.9	-0.91	3.6	1.6	16	LD
AU22U6	57.6	55.5	56.1	55.4	56.2	-0.68	3.5	1.0	56.5	-0.65	3.5	1.3	16	LZ
AZQ966	74.3 X	65.5 *	67.4 *	65.6 *	68.2	4.28 X	4.4	4.2	67.9	4.20 X	4.8	3.0	16	TX
B3BQ84	57.6	56.9 H	55.9	56.0	56.6	-0.49	4.6	0.8	59.1	0.47	4.5	2.7	16	LD
BWLZDZ	57.2	56.4	56.6	56.3	56.6	-0.49	2.2	0.4 L	56.7	-0.56	2.1	0.5 L	12	TH
CLW4YX	55.6	53.1	55.6	60.9	56.3	-0.62	3.7	3.3	56.1	-0.83	4.1	2.1	16	LZ
CNNZNR	56.0	62.0	56.3	58.3	58.2	0.14	3.8	2.8	58.8	0.32	4.2	2.0	16	LC
CR2ZKJ	60.6	58.5	60.2	62.5	60.4	1.08	3.5	1.6	60.0	0.83	3.3	1.5	16	XX
CWH99H	63.5 *	63.2	64.4	63.9	63.8	2.46 *	3.2	0.5	63.4	2.29 *	3.4	2.4	16	LD
DUBCZY	57.9	58.0	58.4	56.3	57.7	-0.06	4.8	0.9	58.0	-0.02	4.3	1.4	16	EN
FL92KK	57.2	60.3	59.9	55.7	58.3	0.20	3.8	2.2	56.4	-0.67	3.4	1.8	16	LZ
FLNTLW	57.3	56.2	55.5	51.2 *H	55.0	-1.14	4.2	2.7	55.3	-1.14	4.2	2.5	16	MB
FQKQKG	59.6	61.9	58.5	58.7 L	59.7	0.76	3.4	1.6	57.8	-0.09	3.3	2.3	16	LD
G3CVQK	57.6	60.0	58.0	60.5	59.0	0.50	3.4	1.4	58.8	0.34	3.2	1.4	16	LD
GW66NE	58.8	59.1	58.6 L	59.0	58.9	0.43	3.1	0.2 L	58.1	0.02	3.5	1.2	16	LD
JD36PD	57.0	53.0	53.3	54.9	54.6	-1.34	2.9	1.8	54.7	-1.39	3.8	2.0	16	LD
JDMFET	58.9	56.8	58.3	57.2	57.8	0.01	3.8	1.0	59.0	0.40	3.4	1.4	16	LD
JQ8MZD	60.5	60.7	59.4	60.6	60.3	1.03	2.7	0.6	61.8	1.62	3.5	3.1	16	TB
K8BJWG	55.8	53.6	53.5	54.3	54.3	-1.45	5.3	1.1	54.5	-1.50	4.2	2.1	16	LD
KTQ22R	61.4	59.3	58.6	60.5	60.0	0.88	3.0	1.2	59.6	0.65	3.2	1.5	16	LD
KVXPTY	65.2 *	67.9 X	64.9	64.5 *	65.6	3.21 X	3.4	1.5	65.6	3.20 X	4.3	1.7	16	LD
KXLTAP	58.7	59.6	58.3	57.9	58.6	0.34	2.5	0.7	58.2	0.08	2.4	1.4	16	LC
LF4JZV	54.9	60.7	71.6 XH	40.5 X	56.9	-0.37	20.1	13.0 H	56.9	-0.47	20.1	13.0 H	4	LZ
LFK9AF	53.6	57.1	56.8	61.8	57.3	-0.21	3.9	3.4	56.1	-0.79	3.2	2.1	13	LD
MMWBKU	60.6	59.6	56.5	54.1	57.7	-0.04	4.3	3.0	57.0	-0.41	4.0	2.1	12	XX
MPNAYT	62.5	61.7 H	65.9 *	62.2	63.1	2.17 *	4.7	1.9	62.0	1.69	5.1	2.0	16	LD
P4ELB7	56.4	54.2	54.2	54.3	54.8	-1.25	3.5	1.1	55.2	-1.18	3.6	1.5	16	LD
PPXYDP	55.5	55.4	54.7	53.6	54.8	-1.24	3.1	0.9	54.1	-1.65	3.2	1.3	16	LD
PWG2KR	58.3 L	58.4 L	58.3 L	58.4 L	58.4	0.24	0.5	0.1 L	58.4	0.17	0.6	0.1 L	16	LD

Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM13

TAPPI Official Test Method T809

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
R6KNAA	56.3	52.5 *	52.1	No Data	53.6	-1.73	3.6	2.3	53.6	-1.86	3.6	2.3	3	TH
R6ZECM	60.1	59.2	59.4	59.5	59.6	0.72	2.9	0.4 L	59.9	0.78	2.8	0.8	16	LD
RBRPLK	54.4	55.0	56.2	55.4	55.3	-1.05	4.3	0.8	55.8	-0.92	4.1	1.3	16	LD
UEKZJA	56.5	56.6	58.4	56.4	57.0	-0.33	3.4	1.0	57.6	-0.19	3.6	1.6	16	LD
UJQTD6	53.1 L	53.0	55.3	54.7 L	54.0	-1.56	1.9	1.2	56.6	-0.62	2.3	2.4	16	TU
V77BHF	58.4	61.3	59.0 H	60.9	59.9	0.86	4.8	1.4	60.4	1.03	3.8	5.2	16	LD
VM6NRG	53.1	54.5	54.3	59.5	55.3	-1.02	3.8	2.9	55.2	-1.19	3.5	2.1	16	LD
VUQBEE	56.7	57.6	62.3	58.5	58.8	0.40	4.5	2.5	57.3	-0.30	4.1	2.2	16	LD
VY7J3D	56.6	57.6	48.5 *	51.6 *	53.6	-1.74	3.8	4.2	61.5	1.47	4.2	6.2 H	16	LD
W64234	57.1	58.0	57.1	58.0	57.6	-0.10	1.7	0.5	59.1	0.47	1.7	1.3	16	MB
X24CY2	58.8	59.2	56.6	59.1	58.4	0.26	2.8	1.2	58.5	0.21	3.0	1.4	13	LC
XENR2Z	54.3	54.9	54.2	55.5	54.7	-1.27	4.1	0.6	55.8	-0.93	4.3	2.8	16	LD
Y6H7CD	60.8	58.1	58.5	59.8	59.3	0.62	3.9	1.2	58.2	0.08	3.4	1.6	16	LZ
Y9WC2E	57.8	57.2	58.2	58.5	57.9	0.05	2.3	0.6	58.3	0.11	2.1	0.6 L	16	LD
YMZ6JW	59.2	58.5	58.8	58.7	58.8	0.40	3.8	0.3 L	57.2	-0.32	2.8	1.3	12	LD
ZXDPGX	57.8	56.3	54.5 L	56.5	56.3	-0.64	2.8	1.4	55.9	-0.91	2.9	1.8	16	LD

Consensus (All Labs) Results

Wk Mean	58.19	58.04	57.90	58.18	Month Mean	57.81	Grand Mean	58.01
Avg SDr	3.58	3.48	3.61	3.58	Avg SD	4.54	Avg SD	4.50
SD btwn Labs	2.74	2.86	3.64	3.16	SD btwn Labs	2.43	SD btwn Labs	2.36
Labs Incld	50	50	50	49	SD btwn Wks	2.53	SD btwn Wks	2.85
Labs Excld	1	1	1	1	Labs Incld	49	Labs Incld	49
Labs not Rcvd	0	0	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
TB	TMI Monitor/Compression Tester, 17-70	TH	TMI Compression Tester, Model 17-76
TU	TMI Universal Crush Tester (TMI K440)	TX	TMI Crush Tester (model not specified)
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
8R449T	71.0 L	73.8 L	74.3 L	71.8 L	72.7	1.70	0.9	1.6	71.3	1.14	0.9	1.3	16	XX
8WUEHQ	71.6	68.7	69.7	70.9	70.2	0.77	3.5	1.3	69.8	0.76	3.7	1.3	16	LD
AU22U6	64.8	59.5 H	63.5	64.8	63.1	-1.85	4.6	2.5	62.5	-0.98	4.5	2.0	16	LZ
CNNZNR	68.7	71.0 L	68.4	66.9	68.7	0.22	2.4	1.7	68.7	0.50	3.1	1.4	16	LC
CR2ZKJ	69.3	65.8	68.3	69.6	68.3	0.05	3.3	1.7	69.0	0.58	2.9	1.4	16	XX
CWH99H	70.5	71.8	72.3	72.3	71.7	1.34	2.3	0.8	70.9	1.03	2.5	1.7	16	LD
FQKQKG	69.5	73.3	69.0	71.5 H	70.8	1.01	3.8	2.0	70.0	0.83	3.8	2.1	16	LD
GW66NE	64.1	65.1	63.2	66.8	64.8	-1.24	3.2	1.5	65.2	-0.34	3.4	1.3	16	LD
K8BJWG	58.8 XH	59.3	59.0 *H	58.9 XH	59.0	-3.37 X	6.8	0.2 L	57.1	-2.28 *	5.8	1.3	16	LD
KTQ22R	65.3 L	67.5	70.9	65.8	67.4	-0.28	3.5	2.5	67.8	0.29	3.6	1.9	16	LD
P4ELB7	72.1	71.6	72.6	72.2	72.1	1.48	3.2	0.4	70.3	0.89	3.5	1.6	16	LD
RBRPLK	67.1	65.8	65.5	70.4	67.2	-0.34	3.6	2.2	66.5	-0.02	3.5	2.1	16	LD
UEKZJA	69.7	70.2	66.8	67.7	68.6	0.18	3.7	1.6	68.4	0.44	3.9	1.4	16	LD
V77BHF	66.6	64.3	63.1	65.3	64.8	-1.23	3.4	1.5	66.0	-0.14	3.4	2.0	16	LD
VUQBEE	63.4 H	67.0	65.7	68.5	66.2	-0.73	4.4	2.2	64.3	-0.56	3.8	2.1	16	XX
W64234	68.2	67.6 L	66.7	66.5	67.2	-0.33	1.8	0.8	66.7	0.02	1.7	1.3	16	MB
X24CY2	68.1	68.7 L	72.6	68.5	69.5	0.50	3.5	2.1	69.5	0.70	4.0	3.6 H	13	LC
XENR2Z	54.0 X	55.9 *H	54.2 XH	54.9 XH	54.8	-4.95 X	8.2	0.9	56.0	-2.54 *	8.0	1.1	16	LD
Y6H7CD	65.6	66.2	67.2	64.7	65.9	-0.82	3.4	1.0	64.9	-0.41	3.4	1.0	16	LZ
Y9WC2E	67.6	66.4	66.3	67.3	66.9	-0.45	2.5	0.6	67.0	0.09	2.3	0.6	16	LD

Consensus (All Labs) Results

Wk Mean	67.96	66.97	67.64	68.40	Month Mean	68.12	Grand Mean	66.58
Avg SDr	3.60	4.15	3.37	2.97	Avg SD	3.28	Avg SD	3.86
SD btwn Labs	2.61	4.68	3.92	2.62	SD btwn Labs	2.70	SD btwn Labs	4.16
Labs Incld	18	20	19	18	SD btwn Wks	1.68	SD btwn Wks	1.73
Labs Excld	2	0	1	2	Labs Incld	18	Labs Incld	20
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - CM13

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
3Q73E9	44.4 H	45.1	48.1	No Data	45.9	1.47	4.8	2.0	43.8	0.73	4.1	2.2	15	LZ
6Z6GFW	46.1	45.3	40.7	44.5	44.1	0.78	3.9	2.4	44.3	1.04	3.7	2.5	15	EM
72AL7Q	38.8	40.2	39.2	41.2	39.8	-0.95	2.3	1.1	40.5	-1.01	2.6	2.8	16	XX
8WUEHQ	48.3 *	47.5 *	45.9	44.6	46.6	1.76	3.7	1.6	45.1	1.48	3.2	1.7	16	LD
AZQ966	42.4	43.9	43.8	42.5	43.1	0.37	3.5	0.8	43.5	0.58	3.3	3.1	16	LZ
B3BQ84	45.8	44.0	42.9	45.3	44.5	0.92	2.9	1.3	43.2	0.42	2.8	1.6	16	LD
BWLZDZ	36.5 *	34.5 X	35.7 *	36.2 *	35.7	-2.61 *	2.1	0.9	36.5	-3.18 X	2.2	1.0	12	TH
CNNZNR	41.8	41.6	47.8	41.1	43.1	0.35	3.5	3.2 H	42.7	0.16	2.9	2.6	16	LC
CR2ZKJ	41.0 L	41.5	42.2	40.8	41.4	-0.34	2.9	0.6	41.9	-0.29	3.5	1.3	16	XX
FLNTLW	42.7	44.3	41.1	40.2	42.1	-0.05	3.8	1.8	43.5	0.60	3.3	1.8	16	MB
FQKQKG	41.9	42.5	41.6	42.3	42.0	-0.06	2.7	0.4	41.2	-0.63	2.7	1.5	16	LD
G3CVQK	43.8	42.3	42.2	42.1	42.6	0.16	3.0	0.8	42.0	-0.24	3.3	1.0	16	LD
GW66NE	40.2	42.7	38.9	41.5	40.8	-0.55	3.8	1.6	40.3	-1.16	3.6	1.6	16	LD
JGLQAT	41.7	38.8	38.7	42.6 H	40.5	-0.70	3.4	2.0	40.6	-1.00	3.4	1.3	16	LD
JQ8MZD	39.0	39.7 L	38.6 L	39.1	39.1	-1.26	1.5	0.4	39.5	-1.60	2.3	1.9	16	XX
KVXPTY	38.3	38.6	39.6 L	39.9	39.1	-1.25	2.0	0.8	39.4	-1.65	2.4	1.3	16	LD
LF4JZV	39.4	41.4	37.6 H	No Data	39.4	-1.11	8.2	1.9	39.4	-1.61	8.2	1.9	3	XX
LFK9AF	43.6	40.6	43.2	42.7	42.5	0.13	3.2	1.4	43.3	0.50	2.9	1.6	16	LD
MMWBKU	44.8	42.4	45.6	44.0	44.2	0.81	4.4	1.4	45.0	1.41	4.5	1.7	12	XX
MPNAYT	39.0	45.5	42.9	42.4	42.4	0.09	3.2	2.7	41.5	-0.50	4.2	2.4	15	LD
P4ELB7	45.0	45.4	43.2	46.0	44.9	1.08	4.0	1.2	44.4	1.05	3.3	1.6	16	LD
PWG2KR	44.5 L	44.5 L	44.5 L	44.6 L	44.5	0.93	0.8	0.1 L	44.3	1.03	0.7	0.2 L	16	LD
QKXFZA	43.5	42.6	40.9	41.1	42.0	-0.07	2.5	1.3	41.7	-0.41	2.6	1.9	16	TH
UEKZJA	44.2	43.7	44.0	43.5	43.8	0.66	3.3	0.3	43.6	0.63	3.6	0.7	16	LD
UJQTD6	38.9	38.0 *	37.1 L	39.2	38.3	-1.57	1.5	0.9	44.5	1.13	1.5	6.3 H	16	TU
VUQBEE	41.9	41.7	43.8	38.4	41.5	-0.30	4.4	2.2	39.7	-1.46	3.6	2.3	16	LD
W24JFF	41.7	43.3	43.2	43.3	42.9	0.27	3.2	0.8	42.7	0.18	2.9	1.2	12	LD
W64234	40.8	41.4	41.1 L	41.6	41.2	-0.39	1.7	0.3	41.3	-0.60	1.7	0.8	16	MB
ZXDPGX	43.7	45.8	47.4	46.1	45.8	1.43	2.7	1.6	44.7	1.23	2.7	1.5	12	LD

Consensus (All Labs) Results

Wk Mean	42.19	42.64	42.12	42.10	Month Mean	42.20	Grand Mean	42.41
Avg SDr	3.25	2.96	4.22	2.95	Avg SD	3.47	Avg SD	3.43
SD btwn Labs	2.74	2.37	3.18	2.38	SD btwn Labs	2.48	SD btwn Labs	1.85
Labs Incld	29	28	29	27	SD btwn Wks	1.50	SD btwn Wks	2.15
Labs Excld	0	1	0	0	Labs Incld	29	Labs Incld	28
Labs not Rcvd	0	0	0	2				

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 - CM13

TAPPI Official Test Method T826

Report #652
January 2024

	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
3M8QJ9	14.6	14.5 H	14.7	15.3	14.8	1.64	1.2	0.4	14.5	1.60	1.1	0.4	16	LA
3Q73E9	13.1	13.9 L	15.9 XH	12.9	13.9	0.20	1.4	1.3 H	12.8	-1.46	1.2	1.2 H	16	XX
4MJAUC	14.7 H	15.4 *	14.9	15.7 *H	15.2	2.32 *	1.6	0.4	14.2	1.06	1.1	0.8	12	LA
8EHWM9	13.2	12.5	13.1	13.9 L	13.2	-1.13	0.8	0.6	13.0	-1.12	0.9	0.4	16	LH
8PWLAW	13.8	12.6	13.9	13.1	13.3	-0.86	1.3	0.6	13.1	-0.97	1.2	0.5	16	LA
8R449T	14.2	14.9	14.1	14.2	14.4	0.96	0.9	0.4	13.9	0.51	1.1	0.7	16	XX
B3BQ84	13.9	13.4	13.9 L	13.7	13.7	-0.19	1.0	0.3	13.7	0.21	1.0	0.4	16	XX
CNNZNR	13.4	13.9	13.4	14.1	13.7	-0.25	1.1	0.4	13.6	-0.04	1.1	0.3	16	LU
CWH99H	14.4 L	13.7 L	14.2	15.0	14.3	0.82	0.8	0.6	14.4	1.38	0.8	0.6	16	LA
FLNTLW	14.5	14.1	13.5	14.7	14.2	0.62	1.3	0.5	14.1	0.82	1.3	0.4	16	LA
JGLQAT	13.5	12.8	14.0	14.0	13.6	-0.46	0.9	0.5	13.4	-0.44	1.0	0.4	16	LZ
JVLRMU	14.8	15.5 *	14.4 L	13.9 L	14.6	1.42	0.7	0.7	14.2	1.08	1.1	0.5	16	LA
K8BJWG	12.6 *	13.2 H	12.8	13.0	12.9	-1.63	1.2	0.3	12.8	-1.49	1.4	0.4	16	LB
KM87EP	13.3	12.5	13.0	13.9	13.2	-1.10	1.2	0.6	13.3	-0.51	1.1	0.4	16	TX
P4ELB7	13.4	13.3 L	13.8	14.4	13.7	-0.16	0.8	0.5	13.7	0.11	0.8	0.5	16	LA
PY444K	13.5	13.4	14.0	14.1	13.8	-0.14	1.0	0.4	13.6	-0.02	1.1	0.5	16	TX
RBRPLK	13.7	14.6	13.5	14.2	14.0	0.30	1.3	0.5	13.8	0.38	1.1	0.4	16	LA
TDQRXK	13.3	14.1	14.3	14.1	13.9	0.18	1.2	0.4	14.0	0.63	1.2	0.4	16	LA
UEKZJA	14.1	13.5	14.1	13.1	13.7	-0.23	1.2	0.5	13.5	-0.29	1.2	0.4	16	LB
UJQTD6	13.0	12.9	12.5 *	12.4	12.7	-1.96 *	1.1	0.3	12.7	-1.66	1.1	0.3	4	XX
VM6NRG	13.6	13.4	13.4	13.7	13.5	-0.54	1.2	0.1	13.2	-0.82	1.1	0.4	16	LU
VUQBEE	14.4	14.0	14.6	12.7	13.9	0.17	1.1	0.8	13.2	-0.83	1.1	1.4 H	16	LZ
VY7J3D	14.2	13.9	14.6	14.4	14.2	0.72	1.1	0.3	14.0	0.59	1.0	0.4	16	LH
W24JFF	13.7	14.4	14.0	14.7	14.2	0.64	1.3	0.4	14.8	2.07 *	1.3	0.6	12	LH
Y9WC2E	13.9	13.4	14.0	13.7	13.7	-0.17	1.1	0.3	13.7	0.17	1.1	0.3	16	LA
YMZ6JW	13.1	13.2	13.2	13.1	13.2	-1.16	1.0	0.0 L	13.1	-0.94	0.9	0.1 L	12	LH

Consensus (All Labs) Results

Wk Mean	13.76	13.73	13.83	13.91	Month Mean	13.83	Grand Mean	13.63
Avg SDr	1.13	1.04	1.16	1.13	Avg SD	1.13	Avg SD	1.11
SD btwn Labs	0.59	0.82	0.61	0.80	SD btwn Labs	0.58	SD btwn Labs	0.56
Labs Incld	26	26	25	26	SD btwn Wks	0.52	SD btwn Wks	0.57
Labs Excld	0	0	1	0	Labs Incld	26	Labs Incld	26
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

LA	L&W Autoline	LB	L&W Model 152
LH	L&W 282	LU	L&W 52 without moisture correction (was 53)
LZ	L&W (model not specified)	TX	TMI (model not specified)
XX	Instrument make/model not specified by lab		

End of Report