Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #565 (L) - October 2016

Revision Notice:

CTS discovered that some flags on the Monthly Results CPV and SD Wks were incorrectly assigned for this cycle. The statistical calculations are correct, only the flag was displayed in error. CTS notified all affected laboratories. If you have any questions, please do not hesitate to contact Kyle Kruger at containerboard@cts-interlab.com or (571) 434-1925 (ext. 115)

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX10	Box Compression Strength, Corrugated Boxes
202	ECT9	Edgewise Compressive Strength, Wax (T811), Corrugated board
203	ECT9	Edgewise Compressive Strength by Clamp (T839), Corrugated board
205	42D2	Mullen Burst of Linerboard, 42 lb Linerboard
207	36Z3	Mullen Burst of Linerboard, 36 lb Linerboard
215	42D2	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
217	36Z3	Ring Crush of Linerboard, Rigid Platen Type, 36 lb Linerboard
223	42D2	STFI of Linerboard, 42 lb Linerboard
225	36Z3	STFI of Linerboard, 36 lb Linerboard
228	56A	Roughness - Stylus Method, 56 lb Linerboard
229	42D2	Roughness - Sheffield Method, 42 lb Linerboard
231	36Z	Internal Bond Strength, Linerboard, 36 lb Linerboard
234	36Z	Coefficient of Static Friction - Inclined Plane, 36 lb Linerboard
237	36Z	Air Resistance - Gurley Method, Linerboard, 36 lb Linerboard
240	CM91	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM91	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM91	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM91	STFI of Medium, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

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

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

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

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

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

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM91	October 2016-Current
	CM81	October 2015-September 2016
36 lb Linerboard	36Z3	December 2014-Current
	36Z2	February 2012-October 2014
42 lb Linerboard	42D2	August 2016-Current
	42D1	April 2015-July 2016
56 lb Linerboard	56A1	July 2016-Current

ABOUT CTS

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

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EXPLANATION OF TABLES

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

Definitions of Terms Used

Weekly Results

Laboratory Data

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

Consensus Data

Wk Mean	- For each week, the average of the Means for all the participants, excluding those laboratories flagged with an 'X'.
Avg SDr	- For each week, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'. The Avg SDr 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.
SDr	- For each laboratory, the average of the weekly within-lab standard deviations (SDr'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 SDr	- For the current month, the average of the within-laboratory standard deviations (SDr'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.

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 (SDr'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 SDr	- For the cumulative period, the average of the within-laboratory standard deviations (SDr'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.

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 SDr for each week is not shown, but laboratory average SDr and consensus average SDr values are shown.
L	Indicates low within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory monthly average SDr and consensus average SDr 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	SDr	Mean	CPV	SDr	Months	Inst
4UUPED	546.2	-1.70	45.8	620.1	-1.00	39.0	4	LG
BA7FFY	628.2	-0.76	32.8	647.5	-0.58	44.8	4	ER
CVKHRA	574.8	-1.38	49.2	596.3	-1.36	29.4	4	LL
D4V2QZ	622.6	-0.83	34.9	602.8	-1.26	133.3	4	EX
DP9WEW	635.8	-0.68	41.2	672.4	-0.20	46.1	4	ES
F44X9A	673.3	-0.25	42.9	667.7	-0.27	49.6	4	LS
F4JCEX	680.7	-0.16	42.9	696.3	0.17	46.9	4	LM
FB76NC	668.3	-0.30	46.1	630.0	-0.85	33.1	4	LH
FKTZQY	770.6	0.87	27.2	752.0	1.02	27.0	4	ER
FQVE9T	690.2	-0.05	46.6	685.1	0.00	50.7	4	LG
JA4DAT	674.0	-0.24	19.2	653.5	-0.49	26.0	4	ER
LVQWCM	673.6	-0.24	20.5	692.6	0.11	33.4	4	LM
MK69UT	789.0	1.08	38.5	769.0	1.28	30.6	4	LH
RUF2A6	771.0	0.87	61.7	676.2	-0.14	48.9	4	LL
T34ENV	630.3	-0.74	57.9	632.3	-0.81	34.1	4	ET
UUU8NL	664.6	-0.35	73.4	633.2	-0.80	46.4	4	LS
VVYD2X	679.8	-0.17	21.5	683.0	-0.04	35.6	4	EX
WVTJXH	560.0	-1.55	35.2	608.8	-1.17	58.5	3	EX
WWKHAV	856.4	1.85	41.1	833.6	2.26 *	42.2	4	TB
XJFNDC	750.7	0.64	37.6	691.1	0.09	61.9	4	ER
XMFUWN	814.5	1.37	56.9	755.6	1.07	34.4	4	XX
YVPFJX	808.9	1.31	31.2	787.9	1.57	43.7	4	TE
Z27CYR	816.9	1.40	45.2	777.8	1.41	41.6	4	LG

Consensus (All Labs) Results

Month Mean	694.80	Grand Mean	685.41
Avg SDr	43.30	Avg SDr	49.73
SD btwn Labs	87.20	SD btwn Labs	65.41
Labs Incld	23	Labs Incld	23

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	713.49	109.73	18.69	5
Clip sealing	679.18	63.47	15.62	15
Tape sealing	741.75	159.19	46.95	3

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Key to Instrument Codes Reported by Participants

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

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Containerboard Interlaboratory Testing Program
Analysis 202
Edgewise Compressive Strength, by T811, Corrugated board - ECT9
TAPPI T811

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
F44X9A	40.8	-0.43	2.6	40.8	-0.42	2.2	4	EM
FQVE9T	42.4	0.27	2.8	44.4	0.79	2.3	4	LZ
HFNCZ2	44.2	1.04	1.0	45.4	1.13	1.2	4	TB
MK69UT	39.3	-1.11	0.9	39.4	-0.89	0.9	4	TC
UUU8NL	44.5	1.21	1.5	44.1	0.69	1.2	4	LC
UYM9PZ	39.6	-0.98	1.1	38.2	-1.29	0.9	4	WK

Consensus (All Labs) Results

Month Mean	41.80	Grand Mean	42.05
Avg SDr	1.81	Avg SDr	1.58
SD btwn Labs	2.26	SD btwn Labs	3.01
Labs Incld	6	Labs Incld	6

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LZ	L&W Crush Tester (model not specified)	TB	TMI Monitor/Compression Tester, Model 17-70
TC	TMI Monitor/Compression Tester, Model 17-37	WK	Zwick Z005 Crush Tester

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	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
3ARGKN	48.4	0.84	1.5	48.9	1.13	1.4	3	LC
4H4U3K	45.5	-0.17	1.4	47.9	0.74	1.7	4	LD
6ZGY2G	43.9	-0.73	1.9	43.9	-0.79	1.9	1	TD
9GW427	44.8	-0.44	1.9	45.2	-0.29	1.3	4	LD
9H4NMK	47.7	0.57	1.8	45.6	-0.15	1.6	4	LC
A9D3F2	46.4	0.13	1.0	45.9	-0.02	1.4	4	LD
BA7FFY	46.0	0.00	1.4	47.1	0.46	1.4	4	LD
CVKHRA	44.4	-0.55	2.9	44.7	-0.48	2.1	4	LC
D4V2QZ	44.2	-0.62	1.7	43.8	-0.83	2.1	4	LD
DP9WEW	44.4	-0.56	1.6	46.4	0.18	1.2	4	LD
EMK3U2	49.6	1.24	1.6	45.8	-0.06	1.5	4	TG
F44X9A	48.6	0.89	1.7	46.8	0.33	1.6	4	EM
F4JCEX	51.2	1.82	2.0	48.3	0.90	1.2	4	TG
FB76NC	50.2	1.46	1.3	44.7	-0.50	1.4	4	EM
FKTZQY	43.4	-0.93	1.6	41.9	-1.56	1.2	4	EM
FQVE9T	45.0	-0.34	1.7	44.4	-0.59	2.1	4	LE
GHZUJ8	49.7	1.28	2.2	48.4	0.96	1.4	4	EM
HFNCZ2	46.1	0.02	0.8	46.8	0.33	1.1	4	TG
JA4DAT	44.3	-0.59	2.3	51.6	2.19 *	4.5	4	TB
K3BTFC	45.0	-0.35	1.1	41.9	-1.57	1.5	4	TB
KTNWFW	40.8	-1.81	1.2	41.9	-1.58	1.7	4	TD
LVQWCM	46.7	0.22	1.8	46.9	0.38	1.5	4	EM
MK69UT	41.0	-1.75	0.8	42.9	-1.19	0.8	4	TC
RE2VZQ	42.9	-1.10	1.0	43.1	-1.10	1.5	4	LD
RUF2A6	45.9	-0.05	1.3	45.0	-0.39	1.2	4	BU
T34ENV	51.7	1.97	0.9	51.5	2.13 *	1.7	4	TD
UPEYZL	41.6	-1.56	1.6	44.3	-0.63	1.2	4	TK
UUU8NL	47.3	0.46	1.3	47.4	0.54	1.5	4	LC
V647TD	44.8	-0.43	1.7	45.9	-0.04	1.7	4	LD
VVYD2X	48.6	0.89	0.8	48.6	1.03	0.9	4	TL
WMKP3P	45.8	-0.07	1.7	45.5	-0.20	1.7	4	TM
WVTJXH	45.8	-0.09	3.3	46.8	0.31	2.7	4	CT
WWKHAV	51.4	1.86	0.9	50.5	1.77	1.9	4	LD
XJFNDC	42.1	-1.35	1.9	41.4	-1.76	3.3	4	EX
YQA78E	42.8	-1.12	1.5	44.2	-0.68	1.5	3	EM
YYL3CL	48.3	0.78	2.3	49.1	1.21	3.4	4	LC
Z27CYR	46.6	0.19	1.3	45.5	-0.16	2.5	4	EM

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Consensus (All Labs) Results

Month Mean	46.01	Grand Mean	45.96
Avg SDr	1.68	Avg SDr	1.89
SD btwn Labs	2.87	SD btwn Labs	2.58
Labs Incld	37	Labs Incld	37

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EX	Emerson (model not specified)
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LE	L&W Crush Tester 840	TB	TMI Monitor/Compression Tester, Model 17-70
TC	TMI Monitor/Compression Tester, Model 17-37	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Digital Crush Tester, 17-76	TK	TLS Compression Tester, Model 5184
TL	Tech-Lab Systems Compression	TM	TMI/Hinde & Dausch

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Containerboard Interlaboratory Testing Program

Analysis 205

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

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
49CJQ4	102.9	106.5	103.2	106.3	104.7	-1.06	8.8	1.9	107.4	-0.46	8.9	3.3	12	TB
4H4U3K	110.8	108.4	109.8	110.8	109.9	0.30	10.7	1.2	110.2	0.42	10.0	0.9	12	LA
4NRHXP	111.6	108.3	114.9	109.2	111.0	0.58	12.4	2.9	109.7	0.26	12.6	2.7	12	XX
4UUPED	107.0	111.3	107.9	107.6	108.5	-0.08	12.0	1.9	111.3	0.79	11.6	3.8	12	AH
4XUXKA	108.6	107.8	111.5	110.4	109.6	0.21	11.4	1.7	109.1	0.08	10.9	2.8	12	LA
69WD78	109.3	109.3	109.2	109.3	109.3	0.13	8.4	0.1 L	109.6	0.24	7.6	0.4 L	12	LJ
6FUAP4	118.6	112.6	113.6	115.8	115.1	1.67	9.8	2.7	112.5	1.17	9.4	4.2	12	LC
72AACA	114.1	109.4	113.2	110.1	111.7	0.77	10.6	2.3	110.0	0.37	11.6	2.4	12	LA
7CQTW8	112.4	113.7	111.5	112.6 L	112.5	0.99	7.0	0.9	112.1	1.02	7.0	3.6	12	LA
8NZT66	116.8	110.2	110.7	119.1 *	114.2	1.42	8.2	4.4	113.8	1.57	9.2	3.8	12	LJ
8RY8NN	106.5	109.7	107.7	109.4	108.3	-0.11	7.6	1.5	110.4	0.51	7.2	2.8	12	TP
8YV2MM	103.8	104.6 L	105.0 L	105.6	104.8	-1.05	5.2	0.8	105.1	-1.20	5.5	1.5	12	RE
9GW427	112.0	107.1	105.1	109.3	108.4	-0.10	9.2	3.0	108.2	-0.22	8.8	2.5	12	AA
9QWW9C	112.5	113.0	102.6	100.7	107.2	-0.41	10.6	6.5	106.9	-0.63	10.2	4.1	12	AH
9VD6WB	96.8 *	96.3 X	106.3	107.2	101.7	-1.86	10.5	5.9	106.5	-0.75	10.6	5.0	12	LC
B8FECW	104.9	105.9	106.2	107.1	106.0	-0.73	8.9	0.9	105.6	-1.05	9.9	2.8	12	LB
BA7FFY	110.4 H	110.1	113.8	114.1	112.1	0.87	13.3	2.1	109.8	0.31	12.2	2.3	12	AH
CUQWXJ	109.0	108.0	109.8	108.4	108.8	0.01	7.7	0.8	109.0	0.05	7.5	1.1	12	AH
CXP9W4	110.2	107.2	110.0	110.5	109.5	0.19	9.1	1.5	113.3	1.42	8.8	5.5	12	LC
D4V2QZ	111.0	113.5	107.5	111.0	110.8	0.52	11.0	2.5	111.6	0.87	9.7	3.8	12	AH
DP9WEW	112.5	111.9	111.4	111.0	111.7	0.77	9.0	0.6	110.6	0.56	10.7	3.3	12	LA
DVY8T2	111.8	109.6	106.2	112.2	109.9	0.31	12.0	2.7	109.9	0.35	12.3	2.0	12	LZ
F44X9A	101.0	105.3	100.1	104.0	102.6	-1.62	11.5	2.4	105.0	-1.24	11.2	4.9	12	RE
FQVE9T	110.9	114.6	119.6 *	114.3	114.9	1.59	11.8	3.6	111.7	0.91	11.7	10.0 H	11	LZ
H3ZAKU	107.4	111.9	No Data	No Data	109.6	0.22	8.4	3.2	110.9	0.64	10.9	3.1	8	LJ
HM9CHZ	106.1	102.8	108.9	100.1	104.5	-1.12	10.7	3.9	107.2	-0.53	10.3	3.4	12	LC
HX8A2T	110.4	109.9	84.5 XL	115.3	105.0	-0.98	10.4	13.9 H	111.3	0.79	11.2	9.1 H	12	LZ
JA4DAT	104.6	111.0	99.8	102.8	104.5	-1.10	13.4	4.7	102.3	-2.09 *	12.2	4.0	12	LA
JHU22P	110.9	109.1	108.7	108.1	109.2	0.11	12.4	1.2	110.2	0.42	12.3	2.9	12	LA
KT6T4P	103.3	103.1	119.5 *	115.4	110.3	0.41	13.5	8.4 H	107.6	-0.40	12.0	5.4	12	LA
L7TEMP	117.0	111.7	122.1 *	117.2	117.0	2.15 *	13.3	4.2	115.9	2.27 *	11.5	2.6	12	LA
LL34ZQ	111.2	117.7 *	113.0	116.6	114.6	1.53	11.1	3.0	112.9	1.29	11.3	3.3	12	AX
LVQWCM	105.8	104.5	105.1	100.9	104.1	-1.23	11.8	2.2	104.3	-1.46	10.6	3.3	12	AH
MK69UT	117.8	111.5	108.3	111.8	112.3	0.93	10.5	4.0	111.6	0.88	11.7	3.0	12	AA
MUVVLP	108.9	106.6	107.2	107.3	107.5	-0.33	8.0	1.0	107.1	-0.55	9.0	2.0	12	LA

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Containerboard Interlaboratory Testing Program

Analysis 205

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

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
NKH27M	101.3	106.2	104.2	105.2	104.2	-1.19	12.6	2.1	107.7	-0.37	11.4	3.5	12	AH
QEAHZT	104.1	107.9	114.3	105.7	108.0	-0.20	12.9	4.5	106.8	-0.64	12.0	3.5	12	LC
QJH3NQ	106.9	103.7	107.4	111.3	107.3	-0.38	12.6	3.1	108.0	-0.28	12.2	3.4	12	LA
RDVBCQ	110.5	112.7	106.8	106.6	109.2	0.10	11.3	3.0	106.1	-0.89	10.4	3.4	12	LC
RE2VZQ	113.7	112.3	106.6	107.7	110.1	0.35	12.7	3.4	107.9	-0.29	11.0	3.6	12	LC
RG8FNQ	110.5	115.8	108.8	108.1	110.8	0.53	11.6	3.5	110.0	0.38	12.2	3.9	12	TB
RJWM9N	112.2 L	111.7 L	110.0	112.3 L	111.6	0.73	4.5	1.1	111.9	0.98	4.7	1.1	12	XX
RWKQFK	112.8	110.2	112.4	113.1	112.1	0.88	8.8	1.3	110.9	0.66	8.6	2.6	12	LC
UJNLXX	101.8	102.2	99.9	104.2	102.0	-1.76	10.2	1.8	106.2	-0.84	8.4	5.0	12	AH
UUU8NL	114.4	110.9	110.8	110.0	111.5	0.72	10.8	2.0	108.0	-0.27	9.4	4.2	12	AH
V647TD	105.1	104.4	105.3	104.8	104.9	-1.01	8.2	0.4 L	105.0	-1.22	7.5	1.0	12	LA
VQM9RJ	103.9	107.6	No Data	No Data	105.7	-0.80	9.4	2.6	104.2	-1.48	8.8	5.8	6	LA
WBPGKM	99.5	101.1 *	102.1	103.1	101.5	-1.91	11.7	1.5	101.8	-2.24 *	11.4	1.3	12	LA
WMWNXY	115.6	116.2	116.9	110.5	114.8	1.58	10.0	2.9	109.9	0.33	10.1	4.8	12	LC
WVTJXH	100.4	96.5 X	104.8 H	99.1 *	100.2	-2.24 *	12.7	3.5	100.5	-2.67 *	14.3	3.1	10	XX
YQ9FYB	105.3	109.1	113.4	111.4	109.8	0.27	13.2	3.5	109.2	0.11	11.9	3.2	12	LC
YYL3CL	114.5	110.4	110.0	105.0 L	110.0	0.31	10.9	3.9	113.0	1.32	11.2	3.6	12	LA
ZBZJJJ	108.9	104.3	105.1	106.7	106.2	-0.66	10.8	2.0	107.8	-0.33	10.7	3.4	12	LC
ZKLL3D	107.8	112.6	110.9	108.5	110.0	0.31	10.4	2.2	111.1	0.72	11.3	3.0	12	LC
ZTVC2B	109.5	110.1	115.0	107.4	110.5	0.46	12.4	3.2	110.1	0.41	12.1	2.9	12	TB

Consensus (All Labs) Results

Wk Mean	108.86	109.19	109.11	108.90	Month Mean	108.76	Grand Mean	108.85
Avg SDr	10.79	10.52	10.86	10.89	Avg SDr	10.70	Avg SDr	10.49
SD btwn Labs	4.89	3.73	4.90	4.47	SD btwn Labs	3.82	SD btwn Labs	3.13
Labs Incld	55	53	52	53	SD btwn Wks	3.56	SD btwn Wks	3.80
Labs Excld	0	2	1	0	Labs Incld	55	Labs Incld	55
Labs not Rcvd	0	0	2	2				

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Key to Instrument Codes Reported by Participants

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

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Containerboard Interlaboratory Testing Program

Analysis 207

Bursting Strength (Mullen), 36 lb Linerboard - 36Z3

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
49CJQ4	85.1	83.7	83.1	83.7	83.9	2.03 *	6.0	0.9	84.0	2.20 *	5.6	1.4	12	TB
4H4U3K	78.8	77.4	78.2 L	77.7	78.0	-0.44	3.5	0.6	78.5	-0.34	4.2	1.4	12	LA
4NRHXP	77.9	78.9	78.2	85.6	80.1	0.45	4.8	3.6	79.1	-0.02	5.3	2.5	12	XX
4UUPED	82.4	82.9	79.9	78.7	81.0	0.80	6.0	2.0	80.8	0.74	5.6	1.8	12	AH
4XUXKA	76.6	79.1	79.5	79.8	78.7	-0.13	6.0	1.5	78.1	-0.49	5.4	1.5	10	LA
69WD78	79.3	79.5	78.0	78.2	78.7	-0.14	4.0	0.8	79.1	-0.05	4.0	0.5	12	LJ
6FUAP4	86.1 *	87.0 *	87.2 *	85.3	86.4	3.08 X	5.3	0.9	84.4	2.40 *	5.2	2.1	12	LC
72AACA	78.7	80.0	82.6	81.2	80.6	0.65	5.9	1.7	80.6	0.65	5.9	1.1	12	LA
7CQTW8	79.9	80.0	80.7	85.7	81.5	1.04	4.1	2.8	81.7	1.13	4.6	3.4	12	LA
8NZT66	76.7	75.6	79.1	83.6	78.8	-0.13	3.3	3.5	79.2	0.02	3.7	2.8	12	LJ
8RY8NN	77.0	76.8	80.9	76.9	77.9	-0.49	5.3	2.0	76.3	-1.32	4.6	1.8	12	TP
8YV2MM	85.2	81.4	81.6	80.8 L	82.3	1.34	3.4	2.0	81.5	1.05	4.4	1.5	12	RE
9GW427	78.9	79.1	81.1	77.5	79.2	0.04	4.9	1.5	80.4	0.55	5.6	2.1	12	AA
9QWW9C	79.0	78.1	77.4	75.6	77.5	-0.65	4.6	1.4	76.3	-1.32	5.3	2.7	12	AH
9VD6WB	74.9	78.6	77.9	74.5	76.5	-1.09	4.2	2.1	77.9	-0.59	4.9	1.9	12	LC
B8FECW	77.5	78.5	77.3	78.4	77.9	-0.48	3.8	0.6	76.4	-1.28	3.9	1.4	12	LB
BA7FFY	80.6	81.7	81.6	81.8	81.4	0.99	5.7	0.6	79.5	0.11	5.4	2.1	12	AH
CUQWXJ	80.6	78.8	78.9	78.4	79.2	0.05	3.7	1.0	79.2	0.02	3.9	1.0	12	AH
CXP9W4	77.0	77.3	77.1	78.6	77.5	-0.66	5.3	0.7	80.1	0.43	4.4	2.6	12	LC
D4V2QZ	81.0	77.0	81.0	77.0	79.0	-0.03	4.9	2.3	80.0	0.37	5.3	2.7	12	AH
DP9WEW	79.2	79.5	79.6	78.7	79.3	0.08	6.0	0.4 L	79.5	0.11	6.0	1.4	12	LA
DVY8T2	78.5	75.8	78.8	78.2	77.8	-0.51	6.1	1.4	78.6	-0.27	5.2	1.5	12	LZ
F44X9A	76.6	75.1	75.7	74.7	75.5	-1.49	5.0	0.8	78.8	-0.19	5.9	3.3	12	RE
FQVE9T	87.6 *	87.1 *	87.7 *	85.0	86.8	3.26 X	6.1	1.3	88.3	4.15 X	6.9	9.8 H	10	LZ
H3ZAKU	80.1	80.4	No Data	No Data	80.3	0.50	4.8	0.2 L	79.2	-0.01	4.6	3.7	5	LJ
HM9CHZ	78.8	77.8	74.8	76.3	76.9	-0.89	6.4	1.8	77.7	-0.67	5.1	1.8	12	LC
HX8A2T	84.2	83.0	75.1	85.9	82.1	1.26	5.4	4.8	79.8	0.27	5.5	3.1	12	LZ
JA4DAT	73.4	72.9 *	71.0 *	73.2	72.6	-2.70 *	4.9	1.1	74.1	-2.32 *	4.4	1.8	12	LA
JHU22P	78.7	73.8	77.9	79.3 H	77.4	-0.69	6.9	2.5	79.6	0.19	6.1	3.0	12	LA
KT6T4P	72.5 *	77.0	81.1	79.2	77.5	-0.68	5.4	3.7	76.5	-1.23	5.0	2.5	12	LA
L7TEMP	82.6	80.2	84.8	83.8	82.9	1.59	5.1	2.0	82.2	1.38	4.6	1.9	12	LA
LL34ZQ	81.0	77.4	79.8	81.3	79.9	0.33	4.4	1.8	80.1	0.42	4.7	2.2	8	AX
LVQWCM	76.1 H	78.0	76.9	78.8	77.5	-0.67	6.2	1.2	77.1	-0.96	5.5	1.8	12	AH
MK69UT	83.0	82.8	84.0	82.3	83.0	1.65	5.8	0.7	81.9	1.21	5.8	1.8	12	AA
MUVVLP	79.5	80.1	81.5	78.5	79.9	0.36	4.4	1.3	80.3	0.50	4.2	1.3	12	LA

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Containerboard Interlaboratory Testing Program
Analysis 207
Bursting Strength (Mullen), 36 lb Linerboard - 36Z3
TAPPI Official Test Method T807

Report #565 (L)
October 2016

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
NKH27M	80.2	81.1	75.6	75.2	78.0	-0.44	6.0	3.1	78.5	-0.34	5.7	2.2	12	AH
QEAHZT	77.3	76.9	79.5	78.7	78.1	-0.40	5.9	1.2	77.7	-0.69	5.9	2.1	12	LC
QJH3NQ	78.0	76.2	79.9	77.0	77.8	-0.54	5.5	1.6	78.1	-0.51	5.7	1.6	12	LA
RDVBCQ	75.7	75.5	75.7	74.2	75.3	-1.59	6.3	0.7	75.7	-1.58	5.2	1.2	12	LC
RE2VZQ	77.3	78.4	76.9	79.5	78.0	-0.44	4.9	1.1	79.3	0.06	5.4	1.6	12	LC
RG8FNQ	80.7	79.0 H	75.9	80.9	79.1	0.02	6.0	2.3	79.6	0.17	5.8	1.9	12	TB
RJWM9N	83.3	84.7	83.8	84.0	84.0	2.05 *	4.5	0.6	85.1	2.69 *	4.4	1.3	12	XX
UJNLXX	81.2	76.2	76.9	101.1 X	83.9	2.01 *	5.2	11.7 H	81.2	0.92	4.9	6.8 H	12	AH
UUU8NL	79.3	80.1	76.3	77.6	78.3	-0.31	5.8	1.7	76.3	-1.34	4.8	2.4	12	AH
V647TD	76.5	79.3	75.3	76.2	76.8	-0.94	3.9	1.7	76.9	-1.05	4.3	1.4	12	LA
VQM9RJ	79.0	82.5	No Data	No Data	80.8	0.71	5.9	2.5	80.8	0.71	5.9	2.5	2	LA
WBPGKM	74.0	75.2	72.7	75.1	74.3	-2.02 *	4.0	1.2	75.8	-1.55	4.4	2.1	12	LA
WMWNXY	80.6	76.4	79.9	77.3	78.5	-0.22	5.2	2.0	77.8	-0.62	5.0	2.4	11	LC
WVTJXH	63.9 X	66.4 X	66.1 X	64.3 X	65.2	-5.83 X	5.3	1.3	67.7	-5.27 X	6.3	2.6	10	XX
YQ9FYB	76.4	76.6	80.3	76.7	77.5	-0.66	5.9	1.9	79.3	0.05	5.2	8.5 H	12	LC
YYL3CL	80.4	80.8	80.3	78.8	80.1	0.43	5.2	0.9	79.6	0.17	5.5	2.4	12	LA
ZBZJJJ	79.5	79.2	78.6	84.1 H	80.3	0.53	8.2	2.5	78.7	-0.23	6.6	2.8	12	LC
ZKLL3D	80.4	77.4	77.3	78.7	78.5	-0.26	4.6	1.5	78.6	-0.28	5.0	1.8	12	LC
ZTVC2B	81.9	81.9	79.9	79.6	80.8	0.74	5.5	1.3	80.8	0.71	5.1	1.3	12	TB

Consensus (All Labs) Results

Wk Mean	79.37	79.05	79.11	79.35
Avg SDr	5.25	5.38	5.34	5.19
SD btwn Labs	3.11	3.00	3.26	3.32
Labs Incld	53	53	51	50
Labs Excld	1	1	1	2
Labs not Rcvd	0	0	2	2

Month Mean	79.06
Avg SDr	5.28
SD btwn Labs	2.38
SD btwn Wks	2.50
Labs Incld	51

Grand Mean	79.20
Avg SDr	5.13
SD btwn Labs	2.19
SD btwn Wks	2.57
Labs Incld	52

Key to Instrument Codes Reported by Participants

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

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	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
266CA9	90.9	91.3	90.7	88.1	90.2	0.54	3.2	1.5	91.4	1.07	3.4	1.8	12	LD
49CJQ4	102.1 X	99.8 *	100.2 *	103.2 X	101.3	3.31 X	4.7	1.6	99.8	3.21 X	4.9	2.0	12	LX
4H4U3K	93.2	91.8	91.9	91.9	92.2	1.04	2.4	0.7	93.2	1.53	2.9	1.9	12	LD
4NRHXP	83.6	82.1	83.7 H	82.9	83.1	-1.25	6.2	0.7	82.1	-1.33	6.3	1.6	12	LC
4XDJFK	93.9 L	93.4 L	93.3 L	92.3	93.2	1.28	1.5	0.7	91.7	1.12	2.5	1.8	12	WK
69WD78	87.0	87.1	87.1	87.1	87.1	-0.25	5.4	0.1 L	87.0	-0.06	4.7	0.8	12	LD
7CQTW8	91.3	88.1 L	90.5	91.2	90.3	0.55	2.8	1.5	88.5	0.33	2.0	1.6	12	LZ
8NZT66	78.2 *	78.8 *	78.1	82.7	79.4	-2.16 *	2.5	2.2	79.5	-1.98	3.1	3.0	12	LC
8RY8NN	87.7	86.9	89.5	87.0	87.8	-0.07	2.8	1.2	86.9	-0.08	3.7	1.4	12	TH
8YV2MM	84.8	84.9	84.9	84.7	84.8	-0.81	3.3	0.1 L	83.6	-0.92	3.4	2.2	12	LZ
9GW427	81.3	82.0	82.0 L No Data		81.8	-1.58	3.0	0.4 L	84.3	-0.75	3.4	1.9	11	LD
9QWW9C	82.7	91.0	87.3	83.8	86.2	-0.47	5.1	3.8	85.6	-0.43	4.9	4.2	12	LC
B8FECW	85.4	90.0	87.4	93.9	89.1	0.26	4.5	3.7	88.2	0.23	4.7	2.5	12	LC
BA7FFY	85.8	85.2	84.6	81.6	84.3	-0.95	4.0	1.9	86.2	-0.26	3.8	2.4	12	LD
D7YW8G	92.5	88.3	96.2	90.2	91.8	0.93	4.9	3.4	88.9	0.43	4.8	7.5 H	12	XX
EFZJXT	85.9	88.3	87.3	86.6	87.0	-0.26	3.3	1.0	85.5	-0.43	3.7	1.6	12	MB
EMK3U2	89.9	89.2	89.5	88.8	89.3	0.31	3.2	0.5 L	91.4	1.07	2.8	4.3	12	TH
F44X9A	88.8	86.1	82.5	89.0	86.6	-0.37	3.0	3.0	86.3	-0.25	3.3	2.5	12	EM
FB76NC	85.8	86.1	86.7	86.9	86.4	-0.43	3.3	0.5 L	83.1	-1.06	3.6	3.0	12	EM
FKTZQY	81.2	81.1	80.6	81.7	81.1	-1.74	3.2	0.5 L	81.9	-1.37	2.9	1.3	12	EM
FQVE9T	88.3	86.3	86.6	90.3	87.9	-0.05	3.5	1.8	86.4	-0.21	3.6	2.5	11	LC
H3ZAKU	89.0	89.5	84.5	89.9	88.2	0.04	4.8	2.5	87.2	-0.02	4.5	2.5	12	LD
HDJNKC	90.0	88.4	89.7	87.8	89.0	0.22	4.8	1.0	89.5	0.56	4.2	2.1	12	EM
HM9CHZ	88.1	88.2	88.8	86.3	87.8	-0.06	4.0	1.1	87.1	-0.03	4.4	2.3	12	LZ
HX8A2T	89.6	90.0	114.7 XH	88.9	95.8	1.93	7.2	12.6 H	86.2	-0.26	5.4	10.1 H	12	LC
JA4DAT	88.8	87.1	82.1	79.8	84.4	-0.91	4.5	4.2	84.1	-0.81	4.3	2.9	12	LD
JHU22P	87.3 H	94.8	100.2 *	97.9 *H	95.1	1.74	7.8	5.6	95.6	2.14 *	6.5	3.1	12	LC
KT6T4P	87.7	86.3	90.1	89.3	88.4	0.07	4.3	1.7	88.7	0.38	3.8	1.9	12	LC
KTNWFW	90.4 L	92.7 L	95.8 L	92.1 L	92.8	1.17	0.9	2.3	92.2	1.26	1.6	2.0	12	TD
L7TEMP	90.9	91.4	92.7	92.9	92.0	0.97	3.6	1.0	90.8	0.91	3.7	1.5	12	LZ
LL34ZQ	63.9 XH	83.7	86.4	84.5	79.6	-2.11 *	5.6	10.5 H	78.0	-2.35 *	5.9	10.4 H	12	LC
LVQWCM	88.1	89.8	92.2	90.9	90.2	0.54	3.8	1.7	89.7	0.62	4.0	1.6	12	EM
MUVVLP	87.3	88.1	89.6	89.8	88.7	0.16	3.4	1.2	89.3	0.51	4.2	1.4	12	LD
QEAHZT	89.3	90.3	91.3	89.6	90.1	0.51	3.9	0.9	90.4	0.81	4.1	1.0	12	LC
QJH3NQ	93.6	95.8	95.6	94.5	94.9	1.70	4.3	1.0	85.5	-0.45	3.6	7.1 H	12	LD

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Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D2

TAPPI Official Test Method T822

Report #565 (L)
October 2016

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QM2XPX	86.1	91.7	91.3	92.9	90.5	0.61	3.8	3.0	89.0	0.44	4.7	2.5	12	MB
RDVBCQ	86.7	88.9	85.3	87.5	87.1	-0.24	4.6	1.5	88.0	0.18	4.2	1.6	12	LD
RE2VZQ	85.1	85.0	87.1 H	84.7	85.5	-0.66	4.2	1.1	86.7	-0.14	4.2	1.7	12	LD
RG8FNQ	87.0	92.2	91.3	88.5	89.8	0.42	4.1	2.4	88.4	0.29	3.9	2.2	12	LC
RJWM9N	85.9	86.2	79.7	89.5	85.3	-0.69	4.1	4.1	83.6	-0.93	4.3	4.2	12	LD
UJNLXX	93.3	90.2	99.7 *	80.0 H	90.8	0.68	5.9	8.2 H	90.2	0.74	4.8	5.7	12	LZ
UM7LFY	88.7	92.0	No Data	97.4 *	92.7	1.16	5.2	4.4	92.9	1.46	6.3	5.2	11	MB
UPEYZL	85.8	85.4	85.6	85.7	85.6	-0.61	4.6	0.2 L	78.7	-2.18 *	3.5	5.4	12	MB
UUU8NL	88.6	91.2	88.8	90.6	89.8	0.43	4.1	1.3	89.2	0.51	4.0	1.1	12	LC
V647TD	88.8	89.5	90.7	90.2	89.8	0.43	3.6	0.9	89.8	0.66	3.1	1.0	12	LD
V9KVRG	88.0	87.9	88.1	91.0	88.7	0.16	3.6	1.5	88.7	0.38	4.2	1.7	12	LD
VQM9RJ	92.0	92.5	No Data	No Data	92.3	1.04	4.4	0.4 L	88.0	0.20	5.4	10.7 H	6	LC
WBPGKM	84.7	85.7	83.6	86.6	85.2	-0.73	3.5	1.3	85.1	-0.55	3.5	1.1	8	LD
WMWNXY	87.7	89.6	85.9	86.8	87.5	-0.14	3.7	1.6	88.5	0.33	3.9	2.6	12	LD
XJFNDC	83.0	84.5	82.2	84.7	83.6	-1.12	4.0	1.2	83.0	-1.08	4.0	1.3	12	EN
YQ9FYB	94.3	94.4	88.9	91.3	92.2	1.03	3.6	2.7	93.1	1.50	6.5	3.0	12	LC
YV7UNL	82.8	82.4	82.2	80.3	81.9	-1.54	3.8	1.1	81.8	-1.38	3.7	2.3	12	LD
YVPFJX	90.1	90.5	90.3	90.6	90.4	0.58	3.7	0.2 L	91.3	1.03	3.3	1.4	12	LD
YYL3CL	82.4 H	97.2 *	95.9	99.2 *	93.7	1.40	5.7	7.6 H	90.5	0.83	7.1	6.1 H	12	LC
Z27CYR	87.2	83.1	83.7	83.6	84.4	-0.92	3.4	1.9	83.6	-0.92	3.4	1.7	12	EM
ZBZJJJ	89.6	96.1	93.5	93.6 L	93.2	1.28	3.4	2.7	93.0	1.48	3.9	1.6	12	LC
ZTVC2B	80.0 *	82.9	81.6	83.3	81.9	-1.54	2.9	1.5	82.2	-1.29	4.2	3.1	12	LZ
ZXQ4BT	84.1	81.9	80.4	81.7	82.0	-1.51	4.4	1.5	81.4	-1.49	4.3	3.2	12	LC

Consensus (All Labs) Results

Wk Mean	87.50	88.53	88.27	88.26	Month Mean	88.08	Grand Mean	87.25
Avg SDr	4.48	3.88	3.92	3.95	Avg SDr	4.17	Avg SDr	4.24
SD btwn Labs	3.59	4.28	5.23	4.48	SD btwn Labs	4.00	SD btwn Labs	3.92
Labs Incld	56	58	55	55	SD btwn Wks	3.32	SD btwn Wks	3.76
Labs Excld	2	0	1	1	Labs Incld	57	Labs Incld	57
Labs not Rcvd	0	0	2	2				

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Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Compression Tester, Model 17-76	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

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	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
266CA9	83.5	83.4	81.7	80.8	82.3	0.45	3.1	1.3	82.5	0.70	3.0	1.4	12	LD
49CJQ4	91.4 *	90.7 *H	91.5 *	89.2	90.7	2.31 *	5.1	1.1	89.7	2.66 *	5.2	2.1	12	LX
4H4U3K	86.7	85.3	86.7	86.1	86.2	1.31	2.7	0.7	87.3	2.02 *	2.9	1.6	12	LD
4NRHXP	70.1 *H	72.2 *H	72.1 H	70.8 *H	71.3	-2.02 *	8.3	1.0	76.0	-1.11	7.1	5.4	12	LC
4XDJFK	83.4	84.3	83.2	83.9	83.7	0.76	2.5	0.5 L	83.2	0.87	2.5	1.2	12	WK
69WD78	79.8	79.9	79.7	79.8	79.8	-0.12	2.8	0.1 L	80.4	0.10	3.3	0.5 L	12	LD
7CQTW8	80.3 L	83.4	83.4	88.7	84.0	0.81	3.1	3.5	83.0	0.83	2.4	2.4	12	LZ
8NZT66	73.5	72.4	75.3	73.4 L	73.6	-1.50	2.1	1.2	73.8	-1.73	2.1	1.4	12	LC
8RY8NN	80.5	80.1	80.5	80.1	80.3	-0.01	3.1	0.2 L	80.1	0.01	3.0	0.9	12	TH
8YV2MM	73.2	74.6	71.6	72.3 *	72.9	-1.65	2.4	1.3	78.7	-0.36	2.6	6.6 H	12	LZ
9GW427	73.8 L	73.9	74.6	No Data	74.1	-1.39	1.8	0.5 L	77.0	-0.84	1.9	2.1	11	LD
9QWW9C	76.2	75.5	70.4	82.3	76.1	-0.94	3.4	4.9	80.4	0.10	2.9	4.4	12	LC
B8FECW	76.7	77.2	75.7	80.2	77.4	-0.65	3.4	1.9	79.4	-0.16	3.6	2.6	12	LC
BA7FFY	78.0	78.6	78.5	77.8	78.2	-0.47	2.1	0.4 L	79.6	-0.11	2.5	1.5	12	LD
D7YW8G	82.4	83.0	87.4	85.0	84.4	0.92	3.1	2.3	81.1	0.31	3.9	7.8 H	12	XX
EFZJXT	84.0 L	82.6	84.1	84.7	83.8	0.79	1.7	0.9	75.8	-1.17	3.3	7.0 H	12	MB
EMK3U2	78.8	78.9 L	78.2	78.5	78.6	-0.39	2.2	0.3 L	80.6	0.15	2.1	1.6	12	TH
F44X9A	77.9	77.8	76.0	80.8	78.1	-0.49	3.0	2.0	78.5	-0.43	2.9	1.9	12	EM
FB76NC	79.9	80.0	79.5	81.3	80.2	-0.04	2.5	0.8	74.9	-1.42	3.6	4.9	12	EM
FKTZQY	74.6	73.9	74.1	75.6	74.6	-1.29	2.8	0.8	74.1	-1.64	2.6	1.3	12	EX
FQVE9T	82.3	82.2	80.4	84.1	82.2	0.42	2.2	1.5	81.0	0.27	2.6	1.9	10	LC
H3ZAKU	78.3	84.4	78.3	83.8	81.2	0.19	4.0	3.4	80.1	0.03	4.0	2.6	8	LD
HDJNKC	84.5	82.2	82.5	81.1	82.6	0.50	2.8	1.4	81.6	0.43	3.2	1.7	12	EM
HM9CHZ	78.4	63.0 XH	83.3 L	81.5	76.5	-0.85	5.4	9.3 H	76.2	-1.05	4.4	7.4 H	12	LZ
HX8A2T	79.3	80.2	80.3 H	84.0	80.9	0.14	4.4	2.1	76.3	-1.02	3.5	4.5	12	LC
JA4DAT	81.6	81.0	74.2 H	76.5	78.3	-0.45	4.6	3.6	78.2	-0.50	4.4	2.1	12	LD
JHU22P	71.9 H	84.8	89.5 H	84.7 H	82.7	0.54	7.2	7.6 H	82.4	0.67	5.6	5.5	12	LC
KT6T4P	78.7	78.2	78.7	80.2	79.0	-0.31	2.1	0.9	80.3	0.08	2.7	1.3	12	LC
KTNWFW	80.6 L	84.6 L	83.9 L	79.8 L	82.2	0.42	1.1	2.3	79.9	-0.04	1.8	2.5	12	TD
L7TEMP	83.1	86.6	83.8	84.1	84.4	0.91	2.7	1.5	83.5	0.98	3.4	1.6	12	LZ
LL34ZQ	60.3 XH	76.9	76.9	77.2	72.8	-1.68	5.0	8.3 H	75.9	-1.13	4.1	6.6 H	8	LC
LVQWCM	79.5	84.0	84.0	86.4	83.5	0.70	3.1	2.9	82.0	0.56	2.9	2.5	12	EM
MUVVLP	79.7	80.7	80.7	78.9	80.0	-0.07	3.1	0.9	78.5	-0.42	3.3	2.7	12	LD
QEAHZT	83.6	82.4	83.7	82.8	83.1	0.62	2.9	0.6	82.9	0.79	3.2	3.2	12	LC
QJH3NQ	87.4	87.4	84.6	86.9	86.6	1.40	3.2	1.3	78.9	-0.31	3.6	6.3 H	11	LD

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Containerboard Interlaboratory Testing Program

Analysis 217

Ring Crush, 36 lb Linerboard - 36Z3

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QM2XPX	79.7	83.5	82.7	80.9	81.7	0.30	2.6	1.8	80.4	0.12	3.5	2.5	12	MB
RDVBCQ	81.6	83.0	84.1	81.1	82.4	0.47	3.0	1.4	81.4	0.39	3.0	1.6	12	LD
RE2VZQ	79.9	80.7	82.8	82.8	81.6	0.27	3.3	1.5	80.4	0.11	3.0	2.0	12	LD
RG8FNQ	81.9	81.0	82.1	77.4	80.6	0.06	3.3	2.2	80.2	0.05	3.4	2.0	12	LC
RJWM9N	76.8	74.5	71.7	76.6	74.9	-1.21	2.6	2.4	74.6	-1.48	3.6	2.3	12	LD
UJNLXX	89.5 *	83.8	90.6	91.3 *	88.8	1.89	2.7	3.4	84.6	1.25	3.1	3.9	12	LZ
UM7LFY	56.7 X	83.0	No Data	84.0 H	74.6	-1.28	6.1	15.5 H	81.9	0.52	4.8	9.2 H	11	MB
UPEYZL	81.0	81.0	80.2	79.2	80.3	0.00	3.2	0.9	74.0	-1.65	3.3	7.0 H	8	MB
UUU8NL	84.2	82.1	83.6	81.8	82.9	0.58	3.0	1.2	82.4	0.67	2.9	1.5	12	LC
V647TD	80.7	80.8	82.1	82.8	81.6	0.29	3.0	1.0	81.9	0.51	2.8	1.0	12	LD
V9KVRG	80.3	78.2	78.1	80.7 L	79.3	-0.23	2.7	1.4	79.0	-0.28	2.7	2.3	12	LD
VQM9RJ	83.8	86.2	No Data	No Data	85.0	1.04	3.1	1.7	85.0	1.37	3.1	1.7	2	LC
WBPGKM	80.0	79.7	78.4	80.4	79.6	-0.16	2.5	0.8	79.6	-0.11	2.5	0.8	4	LD
WMWNXY	79.7	81.4	78.5	79.4	79.7	-0.13	2.7	1.2	80.6	0.17	2.4	1.4	11	LD
XJFNDC	78.8	78.2 L	76.9	77.8 L	77.9	-0.54	1.8	0.8	78.1	-0.51	2.5	1.3	12	EN
YQ9FYB	87.7	87.4	86.6	85.7	86.8	1.45	2.8	0.9	84.9	1.34	3.2	2.0	12	LC
YV7UNL	78.5	77.0	76.3 L	75.6	76.8	-0.78	2.2	1.2	76.3	-1.03	2.7	0.9	12	LD
YVPFJX	84.5	83.7	83.1	84.7	84.0	0.82	2.3	0.8	83.6	0.98	2.2	1.1	12	LD
YYL3CL	75.2 H	87.9	91.5 *	88.0	85.7	1.19	5.2	7.2 H	86.2	1.72	5.9	6.5 H	12	LC
Z27CYR	79.5	81.7	79.3	80.3	80.2	-0.03	2.9	1.1	78.8	-0.34	2.6	2.0	12	EM
ZBZJJJ	83.6	87.6	84.6	87.9 L	85.9	1.25	2.3	2.2	85.9	1.62	3.0	1.4	12	LC
ZTVC2B	72.0	75.1	69.4 *	62.8 XH	69.8	-2.35 *	5.0	5.2	73.4	-1.82	5.1	5.0	12	LZ
ZXQ4BT	73.8	71.8 *	71.8	72.0 *	72.4	-1.78	4.3	1.0	73.6	-1.77	3.7	3.4	12	LC

Consensus (All Labs) Results

Wk Mean	80.10	80.92	80.41	81.33	Month Mean	80.33	Grand Mean	80.01
Avg SDr	3.65	2.97	3.37	3.37	Avg SDr	3.49	Avg SDr	3.45
SD btwn Labs	4.37	4.30	5.23	4.40	SD btwn Labs	4.48	SD btwn Labs	3.62
Labs Incld	56	57	56	55	SD btwn Wks	3.46	SD btwn Wks	3.68
Labs Excld	2	1	0	1	Labs Incld	58	Labs Incld	58
Labs not Rcvd	0	0	2	2				

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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	LX	L&W 506
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TD	TMI Digital Crush Tester, Model 17-09	TH	TMI Compression Tester, Model 17-76
WK	Zwick Z005 Crush Tester	XX	Instrument make/model not specified by lab

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	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
266CA9	22.4	23.8	23.1	22.2	22.9	0.43	2.0	0.7	22.8	0.46	1.8	0.7	12	LY
4H4U3K	23.9	22.9	23.0	23.4	23.3	0.86	1.5	0.5	23.4	1.09	1.5	0.5	12	LA
4NRHXP	21.4	21.4	22.3	23.0	22.0	-0.39	2.0	0.7	21.7	-0.57	1.9	0.8	12	LU
4UUPED	22.9	21.8	21.6	20.6	21.7	-0.66	1.6	0.9	22.2	-0.07	1.7	0.7	12	LU
4XDJFK	23.9	23.9	24.3	24.2	24.1	1.59	1.4	0.2	23.5	1.18	1.2	0.6	12	LZ
4XUXKA	24.5	23.4	23.9	23.7	23.9	1.40	2.0	0.5	24.4	2.12 *	2.1	1.0	12	LU
6FUAP4	24.2	23.5	25.0 *	24.8	24.4	1.88	2.2	0.7	24.4	2.08 *	2.2	0.6	12	LA
6QEGQE	21.4	21.9	21.5	21.8	21.6	-0.75	1.9	0.3	22.0	-0.33	1.8	0.5	8	LW
72AACA	24.4	23.7	23.3	23.6	23.7	1.27	2.3	0.5	23.1	0.77	2.3	0.7	12	LW
8RY8NN	22.2	22.3	21.8	22.2	22.1	-0.27	1.0	0.2	22.2	-0.13	1.0	0.2	12	TT
9GW427	19.9 *	19.5 *	19.9 *	19.2 X	19.6	-2.70 *	1.6	0.4	20.3	-1.95	1.7	0.6	12	LW
9QWW9C	22.9 L	22.9	23.9	23.9	23.4	0.94	1.0	0.6	22.9	0.56	1.1	0.7	12	LY
9VD6WB	23.7	22.7	21.6	22.9	22.7	0.29	2.2	0.9	22.6	0.32	1.9	0.8	12	LA
AKA9BK	22.7	21.3	22.7	22.1	22.2	-0.23	2.1	0.7	21.7	-0.63	1.8	0.8	12	XX
AR8XUB	22.8 L	23.0 L	23.6 L	24.5 L	23.5	1.03	0.0	0.7	33.9	11.45X	0.2	11.2 H	8	LU
B8FECW	22.7	22.6	22.8	23.2	22.8	0.40	1.9	0.3	22.4	0.12	1.7	0.4	12	LU
BA7FFY	22.3	22.7	21.3	22.2	22.1	-0.28	1.9	0.6	22.1	-0.20	2.0	0.6	12	LU
CUQWXJ	22.3	22.2	22.4	22.5	22.3	-0.10	1.0	0.1	22.3	-0.03	1.0	0.2	12	TT
CXP9W4	20.5 L	21.6 L	21.7 L	23.3 L	21.8	-0.60	0.4	1.2	21.7	-0.55	0.4	1.0	12	LA
D7YW8G	23.4 L	22.9 L	22.2 L	20.7 L	22.3	-0.11	0.1	1.2	22.5	0.18	0.1	0.8	12	XX
DVY8T2	24.5	24.5	24.7 *	23.8	24.4	1.88	2.1	0.4	23.8	1.51	2.1	0.8	12	LZ
E4LPHU	20.3 L	20.5 L	21.1 L	21.3 L	20.8	-1.56	0.0	0.5	20.7	-1.61	0.0	0.7	12	LW
EFZJXT	21.9 L	22.5 L	21.9 L	22.9 L	22.3	-0.10	0.3	0.5	23.2	0.92	0.4	0.9	12	BK
F44X9A	21.5	21.2	21.3	21.4	21.4	-1.03	2.4	0.1	22.1	-0.16	2.0	0.8	12	LZ
FQVE9T	22.2	22.0	20.8	22.5	21.9	-0.55	1.7	0.8	22.0	-0.29	1.8	0.6	11	LW
H3ZAKU	23.1 L	23.3 L	25.7 XL	No Data	24.0	1.54	0.0	1.4 H	23.4	1.13	0.0	1.3	9	LU
HM9CHZ	21.7 L	21.3 L	21.9 L	21.5 L	21.6	-0.79	0.4	0.2	21.7	-0.63	0.4	0.6	12	LA
HX8A2T	22.2	22.6	23.2	24.6	23.2	0.71	2.1	1.0	22.7	0.43	2.1	3.2 H	12	LW
JA4DAT	21.9	22.9	21.8	23.3	22.5	0.05	2.0	0.8	21.7	-0.57	2.0	0.8	12	LY
JHU22P	20.3 L	21.5 L	20.9 L	23.8 L	21.6	-0.77	0.0	1.5 H	20.7	-1.57	0.0	1.3	12	LW
KT6T4P	19.9	21.2	20.8	20.8	20.7	-1.68	1.6	0.6	20.9	-1.36	1.4	0.6	12	LA
L7TEMP	22.6	21.9	22.2	21.4	22.0	-0.40	1.9	0.5	21.5	-0.74	1.8	0.5	12	LW
LL34ZQ	19.1 *	20.9	21.2	21.1	20.6	-1.77	1.5	1.0	20.3	-1.96	1.7	1.0	12	XX
NKH27M	23.4	22.6	22.5	22.2	22.7	0.26	1.6	0.5	22.7	0.37	1.8	0.7	12	LU
QEAHZT	22.3 L	21.8 L	22.7 L	22.0 L	22.2	-0.20	0.4	0.4	22.3	-0.03	0.4	0.5	11	LA

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Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D2

TAPPI Provisional Test Method T826

Report #565 (L)
October 2016

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
QJH3NQ	24.0	22.4	22.8	23.1	23.1	0.66	2.5	0.7	20.7	-1.58	2.0	1.9 H	12	LY
RDVBCQ	23.8	23.2	22.7	22.9	23.1	0.70	2.0	0.5	22.6	0.27	1.8	0.6	12	LA
RE2VZQ	22.6	24.6 *L	22.2	23.4	23.2	0.73	1.4	1.1	22.8	0.48	1.8	1.0	12	LA
RG8FNQ	23.1	23.3	23.3	23.0	23.2	0.73	2.1	0.1 L	22.8	0.46	2.2	0.5	12	LW
RWKQFK	23.5 L	23.6 L	21.9 L	22.2 L	22.8	0.37	0.5	0.9	23.2	0.90	0.5	1.0	12	LA
UM7LFY	22.1 L	22.0 L	No Data	22.2 L	22.1	-0.31	0.0	0.1 L	22.4	0.07	0.1	0.5	11	LA
UUU8NL	22.3	21.5	21.9	22.5	22.0	-0.38	1.8	0.4	22.0	-0.29	1.9	0.5	12	LU
V647TD	21.8	21.2	21.2 L	22.7	21.7	-0.68	1.7	0.7	21.8	-0.52	1.4	0.5	12	BK
WBPGKM	22.5	21.4	22.1	21.4	21.8	-0.57	1.7	0.5	22.0	-0.26	1.6	0.8	12	LW
WMWNXY	21.7	21.3	20.9	20.8	21.2	-1.19	2.1	0.4	21.8	-0.46	2.1	0.8	12	LZ
XJFNDC	21.4	20.8	20.6	20.1 *	20.7	-1.63	2.0	0.5	20.4	-1.82	1.9	0.5	12	LY
YQ9FYB	47.1 X	22.9 L	46.9 X	41.6 X	39.6	16.62 X	3.2	11.4 H	31.1	8.64 X	2.0	10.4 H	12	LA
YV7UNL	21.8	22.3	22.8	22.0	22.2	-0.19	2.0	0.4	21.8	-0.51	1.8	0.5	12	LY
YVPFJX	21.4	22.2	22.3	21.6	21.9	-0.54	2.1	0.4	21.8	-0.46	1.8	0.4	12	LY
YYL3CL	23.9	22.5	23.1	22.4	23.0	0.52	1.8	0.7	23.5	1.20	1.9	1.0	12	LU
ZBZJJJ	23.1 L	24.5 *L	24.2 L	24.7 L	24.1	1.66	0.0	0.7	24.1	1.83	0.0	0.9	12	LA
ZKLL3D	23.9	23.5	22.6	23.5	23.4	0.91	1.7	0.6	23.8	1.44	1.8	0.7	12	XX
ZTVC2B	21.4	22.3	22.4	22.0	22.0	-0.37	1.8	0.4	21.6	-0.63	1.7	0.5	12	LZ

Consensus (All Labs) Results

Wk Mean	22.41	22.38	22.31	22.55	Month Mean	22.42	Grand Mean	22.29
Avg SDr	1.64	1.63	1.65	1.74	Avg SDr	1.65	Avg SDr	1.62
SD btwn Labs	1.26	1.06	1.10	1.14	SD btwn Labs	1.04	SD btwn Labs	1.02
Labs Incld	52	53	50	50	SD btwn Wks	0.67	SD btwn Wks	0.89
Labs Excld	1	0	2	2	Labs Incld	52	Labs Incld	51
Labs not Rcvd	0	0	1	1				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
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

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	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
266CA9	21.8	21.6	22.2	20.9	21.7	-0.08	1.1	0.5	21.4	-0.20	1.1	0.5	12	LY
4H4U3K	22.1	21.8	22.1	21.9	22.0	0.28	1.2	0.1	22.1	0.50	1.3	0.3	12	LA
4NRHXP	21.5	21.2	21.6	22.2	21.6	-0.13	1.2	0.4	21.2	-0.38	1.3	0.4	12	LU
4UUPED	22.5	21.9	21.1	22.0	21.9	0.18	1.4	0.6	21.6	-0.04	1.4	0.5	12	LU
4XDJFK	23.5	23.4	23.2	23.4	23.4	1.68	1.0	0.1	23.1	1.49	0.9	0.3	12	LZ
4XUXKA	22.2	23.3	22.3	22.6	22.6	0.88	1.3	0.5	23.2	1.58	1.3	0.8	12	LU
6FUAP4	24.3 *	23.5	23.7 *	23.2	23.7	1.98	1.3	0.5	23.7	2.11 *	1.4	0.3	12	LA
6QEGQE	21.2	21.2	21.5	21.1	21.3	-0.49	1.1	0.2	21.4	-0.25	1.1	0.4	8	LW
72AACA	23.4	23.7	22.8	22.8	23.2	1.49	1.5	0.4	22.7	1.14	1.4	0.9	12	LW
8RY8NN	21.5	21.4	21.4	21.1	21.4	-0.36	0.9	0.2	21.4	-0.24	0.8	0.2	12	TT
9GW427	19.4	19.5 *	19.6 *	No Data	19.5	-2.24 *	1.0	0.1	19.9	-1.76	1.1	0.3	11	LW
9QWW9C	20.9	21.6	21.3 L	21.6	21.4	-0.37	0.6	0.3	21.3	-0.29	0.6	0.5	12	LY
9VD6WB	22.4	22.2	21.5	21.7	21.9	0.20	1.4	0.4	21.8	0.20	1.3	0.4	12	LA
AKA9BK	20.7	20.5	21.5 H	21.5	21.1	-0.68	1.9	0.5	20.8	-0.79	1.7	0.9	11	LY
AR8XUB	22.2 L	22.0 L	20.9 L	21.7 L	21.7	-0.04	0.0	0.6	26.3	4.78 X	0.1	6.3 H	12	LU
B8FECW	21.8	22.7	22.6	22.6	22.4	0.67	1.4	0.4	21.7	0.11	1.3	0.6	12	LU
BA7FFY	20.9	21.3	21.6	21.4	21.3	-0.45	1.1	0.3	21.2	-0.39	1.1	0.3	12	LU
CUQWXJ	21.5	21.5	21.7	21.8	21.6	-0.11	0.8	0.2	21.7	0.07	0.8	0.2	12	TT
CXP9W4	20.2 L	20.0 L	20.9 L	21.6 L	20.7	-1.07	0.3	0.7	20.5	-1.12	0.2	0.5	12	LA
D7YW8G	21.2 L	21.9 L	21.1 L	22.2 L	21.6	-0.13	0.0	0.5	21.7	0.04	0.0	0.3	12	XX
DVY8T2	23.8	24.0	24.0 *	23.8 *	23.9	2.22 *	1.3	0.1	23.5	1.91	1.3	0.5	12	LZ
E4LPHU	20.1 L	19.9 L	21.4 L	21.9 L	20.8	-0.92	0.0	1.0 H	20.2	-1.39	0.0	0.8	12	LW
EFZJXT	22.5 L	23.4 L	23.0 L	23.0 L	23.0	1.26	0.2	0.3	22.6	1.01	0.2	0.8	12	BK
F44X9A	20.5	20.7	21.3	20.8	20.8	-0.92	1.2	0.3	21.1	-0.56	1.2	0.7	12	LZ
FQVE9T	21.1	21.2	21.3	20.7	21.1	-0.64	1.1	0.3	20.9	-0.77	1.1	0.3	10	LW
H3ZAKU	23.8 L	23.1 L	No Data	No Data	23.5	1.77	0.0	0.5	22.7	1.12	0.0	0.8	5	LU
HM9CHZ	21.8 L	21.0 L	21.1 L	20.7 L	21.1	-0.61	0.3	0.5	20.9	-0.69	0.2	0.8	12	LA
HX8A2T	22.0	21.8	21.8	22.7	22.1	0.37	1.3	0.4	21.5	-0.14	1.2	1.2	12	LW
JA4DAT	21.3	21.6	21.4	21.7	21.5	-0.23	1.4	0.1	21.0	-0.62	1.3	0.6	12	LY
JHU22P	20.5 L	20.8 L	22.0 L	23.0 L	21.5	-0.19	0.0	1.1 H	20.8	-0.87	0.0	1.0	12	LW
KT6T4P	20.0	20.2	20.9	20.3	20.4	-1.41	1.1	0.4	20.3	-1.32	0.9	0.4	12	LA
L7TEMP	21.0	21.0	21.2	21.0	21.0	-0.70	1.2	0.1	20.8	-0.80	1.1	0.5	12	LW
LL34ZQ	19.6	20.7	21.1	20.6	20.5	-1.24	1.3	0.6	20.0	-1.59	1.4	0.9	8	XX
NKH27M	22.0	22.1	21.1	21.3	21.6	-0.09	1.3	0.5	22.0	0.36	1.3	0.7	12	LU
QEAHZT	22.3 L	21.3 L	22.0 L	22.1 L	21.9	0.18	0.3	0.4	21.9	0.27	0.2	0.6	11	LA

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Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 36 lb Linerboard - 36Z3

TAPPI Provisional Test Method T826

WebCode	Weekly Means Week 1	Week 2	Week 3	Week 4	Monthly Results Mean	CPV	SDr	SD Wks	Cumulative Results Mean	CPV	SDr	SD Wks	Wks	Inst
QJH3NQ	22.4	23.8	22.9	22.1	22.8	1.10	1.6	0.7	23.1	1.51	1.3	4.3 H	12	LU
RDVBCQ	22.5	22.2	22.2	22.4	22.3	0.62	1.4	0.1	21.9	0.31	1.3	0.6	12	LA
RE2VZQ	22.5	21.6 L	22.6	23.4	22.5	0.80	1.3	0.8	22.4	0.78	1.4	0.7	12	LA
RG8FNQ	22.5	22.2	22.1	21.5	22.1	0.33	1.2	0.4	21.9	0.29	1.3	0.4	12	LW
RWKQFK	23.6 L	22.8 L	21.5 L	22.2 L	22.5	0.82	0.3	0.9	22.2	0.64	0.3	0.8	8	LA
UM7LFY	21.2 L	21.3 L	No Data	20.5 L	21.0	-0.75	0.0	0.4	21.1	-0.56	0.0	0.4	11	LA
UUU8NL	21.3	21.6 L	21.5	21.6	21.5	-0.25	0.8	0.1	21.5	-0.11	1.2	0.3	12	LU
V647TD	20.9	20.9	20.4 L	20.6	20.7	-1.06	0.7	0.2	20.7	-0.97	0.9	0.3	12	BK
WBPGKM	21.1	21.0	20.9	21.3	21.1	-0.68	1.2	0.2	21.1	-0.49	1.0	0.3	12	LW
WMWNXY	20.9	22.6	21.1	20.9	21.4	-0.34	1.4	0.8	21.3	-0.30	1.4	0.6	11	LZ
XJFNDC	19.8	19.6	19.7 *	19.8 *	19.7	-2.03 *	1.1	0.1	20.0	-1.69	1.1	0.4	12	LY
YQ9FYB	35.1 X	22.2 L	33.4 X	21.3 L	28.0	6.40 X	1.1	7.3 H	26.4	4.80 X	0.9	5.7 H	12	LA
YV7UNL	21.5	21.5	20.9	21.0	21.2	-0.53	1.3	0.3	21.0	-0.61	1.3	0.3	12	LY
YVPFJX	21.0	21.2	20.7	20.9	21.0	-0.78	1.4	0.2	20.8	-0.82	1.4	0.5	12	LY
YYL3CL	22.6	22.4	22.8	22.5	22.6	0.85	1.4	0.2	23.3	1.71	1.3	0.8	12	LU
ZBZJJJ	22.9 L	24.1 *L	24.0 *L	23.7 *L	23.7	1.97	0.0	0.5	23.4	1.80	0.0	0.6	12	LA
ZKLL3D	22.8	22.5	22.4	22.8	22.6	0.93	1.1	0.2	23.2	1.55	1.3	0.6	12	XX
ZTVC2B	20.0	20.7	21.0	21.1	20.7	-1.05	1.3	0.5	20.9	-0.78	1.2	0.4	12	LZ

Consensus (All Labs) Results

Wk Mean	21.67	21.75	21.69	21.77	Month Mean	21.73	Grand Mean	21.62
Avg SDr	1.08	1.09	1.16	1.11	Avg SDr	1.10	Avg SDr	1.10
SD btwn Labs	1.15	1.11	0.94	0.93	SD btwn Labs	0.98	SD btwn Labs	0.99
Labs Incld	52	53	50	51	SD btwn Wks	0.47	SD btwn Wks	0.84
Labs Excld	1	0	1	0	Labs Incld	52	Labs Incld	51
Labs not Rcvd	0	0	2	2				

Key to Instrument Codes Reported by Participants

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

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	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
36XKXJ	169.3	-0.42	24.1	160.8	-0.74	16.4	4	EV
4H4U3K	170.2	-0.38	12.8	153.0	-1.15	16.3	4	XX
4XUXKA	180.6	0.13	17.7	183.5	0.46	16.5	4	EV
9QWW9C	135.6	-2.06 *	15.5	133.4	-2.18 *	13.6	4	EV
9VD6WB	163.9	-0.69	14.9	163.1	-0.62	16.8	4	LA
BA7FFY	184.5	0.31	11.9	186.5	0.62	17.8	4	EV
CXP9W4	169.0	-0.44	10.0	156.0	-0.99	11.4	4	EV
D7YW8G	205.6	1.34	21.9	202.8	1.48	26.4	4	EV
DVY8T2	163.9	-0.69	14.6	166.1	-0.46	19.0	4	XX
EFZJXT	199.0	1.01	20.4	196.4	1.14	17.8	3	EV
HM9CHZ	219.1	1.99	37.1	199.1	1.28	23.2	4	EV
HX8A2T	188.2	0.49	14.9	172.9	-0.10	15.0	4	EV
JHU22P	185.8	0.38	20.3	180.7	0.31	18.0	4	EV
L7TEMP	167.2	-0.53	12.0	182.1	0.39	14.8	4	EV
QEAHZT	189.5	0.56	33.0	202.1	1.44	22.7	4	LA
UM7LFY	190.5	0.60	30.0	188.2	0.71	26.9	4	LA
WBPGKM	201.0	1.11	20.1	187.8	0.68	23.9	4	EV
WMWNXY	166.9	-0.54	15.5	182.0	0.38	20.7	4	LA
XJFNDC	179.3	0.06	14.5	163.1	-0.61	15.1	4	EV
YQ9FYB	195.3	0.84	13.0	179.5	0.25	17.3	4	LA
YYL3CL	141.0	-1.80	16.7	142.2	-1.71	15.8	4	LA
ZBZJJJ	151.8	-1.27	20.1	164.1	-0.56	18.8	4	LA

Consensus (All Labs) Results

Month Mean	178.06	Grand Mean	174.79
Avg SDr	19.91	Avg SDr	18.79
SD btwn Labs	20.63	SD btwn Labs	19.01
Labs Incld	22	Labs Incld	22

Key to Instrument Codes Reported by Participants

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

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Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42D2

TAPPI Provisional Test Method T538

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
4YDL6P	387.0	0.36	8.9	376.5	1.58	8.4	2	XX
62CEEE	365.6	-0.40	10.5	366.4	-0.25	8.2	4	LA
RDVBCQ	436.0	2.12 X	0.7	438.2	12.82 X	0.8	4	XX
RE2VZQ	361.0	-0.57	9.0	364.9	-0.53	7.9	4	LA
RWKQFK	356.1	-0.75	11.8	360.4	-1.35	7.6	4	XX
UJNLXX	363.9	-0.47	4.0	371.0	0.58	5.9	4	XX
UUU8NL	368.3	-0.31	10.7	367.7	-0.02	7.7	4	XX

Consensus (All Labs) Results

Month Mean	376.85	Grand Mean	367.78
Avg SDr	8.78	Avg SDr	7.66
SD btwn Labs	27.84	SD btwn Labs	5.50
Labs Incld	7	Labs Incld	6

Key to Instrument Codes Reported by Participants

LA	L & W Roughness Sheffield - Autoline	XX	Instrument make/model not specified by lab

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	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
4NRHXP	0.2	-4.54 X	0.0	119.7	-1.47	5.4	4	TM
4XUXKA	131.6	-0.91	9.0	127.9	-1.19	11.2	4	TM
9GW427	180.8	0.45	9.0	177.9	0.51	6.6	4	TM
BA7FFY	153.0	-0.32	6.8	152.3	-0.36	6.4	4	TM
D94P2F	155.6	-0.24	2.1	158.7	-0.14	4.7	4	TM
DVY8T2	154.4	-0.28	8.2	153.8	-0.31	10.6	4	TM
H3ZAKU	155.6	-0.24	9.7	152.5	-0.35	14.6	4	HZ
HM9CHZ	168.2	0.10	7.7	172.7	0.34	6.6	3	TM
JHU22P	233.0	1.89	17.9	217.8	1.87	12.4	4	SC
KT6T4P	152.8	-0.32	9.1	164.2	0.05	7.9	3	TM
LL34ZQ	79.5	-2.35 *	6.6	109.4	-1.82	6.3	4	SC
MUVVLP	169.0	0.13	4.2	171.3	0.29	5.5	4	SC
QEAHZT	227.6	1.74	8.9	202.3	1.34	8.8	4	HY
RDVBCQ	66.4	-2.71 X	0.8	76.5	-2.94 X	1.4	4	LZ
RWKQFK	156.8	-0.21	7.1	154.6	-0.28	7.5	4	SC
UUU8NL	188.0	0.65	8.0	183.8	0.71	5.9	4	HY
WBPGKM	187.6	0.64	13.5	204.8	1.43	13.3	3	HY
YYL3CL	137.8	-0.74	10.8	145.2	-0.60	9.1	4	TM

Consensus (All Labs) Results

Month Mean	164.46	Grand Mean	162.87
Avg SDr	9.31	Avg SDr	8.90
SD btwn Labs	36.20	SD btwn Labs	29.38
Labs Incld	16	Labs Incld	17

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	161.77	39.09	2.69	13
Modified Scott Bond Mechanics	187.80	0.28	23.34	2

Analysis Notes

RDVBCQ - Method used is not covered in this test. Lab has been contacted by CTS.

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

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	Monthly Results			Cumulative Results			
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months
4H4U3K	25.6	-0.43	1.1	25.7	-0.78	1.4	4
4UUPED	26.8	0.15	1.1	27.5	0.16	1.0	4
4XUXKA	26.4	-0.04	1.1	26.9	-0.16	1.6	4
9GW427	21.9	-2.20 *	1.9	24.0	-1.63	2.5	4
BA7FFY	29.4	1.41	0.9	28.9	0.93	1.3	4
DVY8T2	22.2	-2.06 *	2.6	25.3	-0.97	2.8	4
F44X9A	27.5	0.49	2.1	26.9	-0.13	2.0	4
HM9CHZ	30.2	1.79	1.9	31.4	2.22 *	2.2	4
HX8A2T	26.6	0.06	3.4	27.3	0.08	2.6	4
JA4DAT	27.8	0.63	0.8	28.9	0.91	1.4	4
JHU22P	28.4	0.92	1.1	27.6	0.23	2.1	4
LCVL7Y	26.7	0.10	1.8	28.6	0.76	1.5	4
QEAHZT	25.4	-0.52	3.2	27.6	0.23	2.7	3
RDVBCQ	28.2	0.83	0.8	30.7	1.83	0.8	4
RG8FNQ	25.4	-0.52	1.5	25.6	-0.84	2.7	4
RWKQFK	28.8	1.12	1.9	28.2	0.52	1.7	4
UUU8NL	25.8	-0.33	1.5	24.9	-1.18	1.2	4
VQM9RJ	28.2	0.83	1.9	29.0	0.97	2.8	2
WBPGKM	26.2	-0.14	1.5	26.0	-0.60	1.2	3
XJFNDC	24.3	-1.05	1.2	25.7	-0.76	1.3	4
YYL3CL	25.8	-0.33	1.1	26.1	-0.58	3.2	4
ZKLL3D	25.0	-0.71	0.7	24.8	-1.23	1.7	4

Consensus (All Labs) Results

Month Mean	26.48	Grand Mean	27.15
Avg SDr	1.76	Avg SDr	2.01
SD btwn Labs	2.08	SD btwn Labs	1.91
Labs Incld	22	Labs Incld	22

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2X6RCJ	52.4	0.56	1.4	52.9	0.61	1.9	4	XX
4H4U3K	48.8	-0.84	1.6	50.4	-0.91	2.1	4	LA
4XUXKA	44.5	-2.51 *	3.0	44.4	-4.54 X	2.3	4	LA
7CQTW8	52.0	0.42	1.4	52.3	0.21	2.1	4	XX
9GW427	48.6	-0.90	2.2	50.6	-0.78	2.3	4	HG
D7YW8G	49.9	-0.39	2.6	50.6	-0.78	2.3	4	LW
DVY8T2	47.3	-1.43	2.0	49.8	-1.28	2.8	4	TD
EFZJXT	55.8	1.91	2.2	55.6	2.25 *	2.5	3	XX
HM9CHZ	51.0	0.02	1.3	51.4	-0.33	2.2	4	LP
JA4DAT	53.9	1.14	1.9	53.2	0.81	2.1	4	LP
JHU22P	50.8	-0.05	2.0	51.9	0.01	2.4	4	HG
LCVL7Y	52.2	0.51	2.6	54.2	1.40	2.6	4	GA
MUVVLP	49.8	-0.43	2.3	50.3	-1.00	1.6	4	LP
PZAGMR	51.6	0.28	1.5	51.4	-0.30	1.6	3	LA
QEAHZT	51.0	0.04	2.8	50.9	-0.64	2.2	4	LA
RDVBCQ	53.8	1.11	1.7	53.7	1.09	1.8	4	LA
RG8FNQ	48.0	-1.15	2.7	51.0	-0.57	2.1	4	LP
RJWM9N	49.7	-0.48	3.4	50.5	-0.85	2.8	4	GG
UUU8NL	53.0	0.81	1.9	53.7	1.07	2.8	4	TP
WBPGKM	54.3	1.32	1.6	54.4	1.54	2.3	4	LP
YQ9FYB	49.5	-0.55	2.5	50.0	-1.14	1.9	4	LA
YVPFJX	49.6	-0.52	1.3	50.2	-1.05	1.5	4	LP
YYL3CL	53.8	1.13	2.1	53.0	0.66	1.8	4	LA
ZBZJJJ	51.0	0.01	2.5	51.9	0.00	3.4	4	TL
ZKLL3D	41.8	-3.57 X	1.2	42.4	-5.79 X	1.8	4	LA

Consensus (All Labs) Results

Month Mean	50.93	Grand Mean	51.91
Avg SDr	2.18	Avg SDr	2.26
SD btwn Labs	2.55	SD btwn Labs	1.65
Labs Incld	24	Labs Incld	23

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Key to Instrument Codes Reported by Participants

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

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	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
266CA9	61.7	61.4	61.2	61.1	61.4	0.83	2.8	0.3 L	61.4	0.83	2.8	0.3 L	4	LD
2X6RCJ	59.4	58.1	61.2	61.0	59.9	0.05	2.9	1.5	59.9	0.05	2.9	1.5	4	LD
3XYVGE	58.2	57.2	58.4	57.9	57.9	-1.01	2.1	0.5	57.9	-1.01	2.1	0.5	4	EM
49CJQ4	57.5	60.1	60.7	60.1	59.6	-0.11	3.0	1.4	59.6	-0.11	3.0	1.4	4	LD
4H4U3K	61.4	61.4	60.2	60.9	61.0	0.64	2.7	0.6	61.0	0.64	2.7	0.6	4	LD
4NRHXP	60.7	59.2	60.0	62.5	60.6	0.41	3.2	1.4	60.6	0.41	3.2	1.4	4	LC
4UUPED	58.9	59.6	60.3	58.9 L	59.4	-0.21	2.2	0.7	59.4	-0.21	2.2	0.7	4	LZ
4XDJFK	57.4 L	57.5	57.6	57.5	57.5	-1.23	1.9	0.1 L	57.5	-1.23	1.9	0.1 L	4	LC
4XUXKA	58.4	62.5	58.9	59.0	59.7	-0.06	3.5	1.9	59.7	-0.06	3.5	1.9	4	XX
69WD78	58.9	58.9	58.8	58.8	58.9	-0.51	3.9	0.0 L	58.9	-0.51	3.9	0.0 L	4	LD
6FUAP4	57.2	58.2	58.8	57.1	57.8	-1.07	3.3	0.8	57.8	-1.07	3.3	0.8	4	LD
72AACA	58.1	57.5	58.0 H	64.2 H	59.4	-0.19	7.3	3.2 H	59.4	-0.19	7.3	3.2 H	4	LC
8NZT66	57.5	61.4	63.0	57.4	59.8	0.00	2.0	2.8	59.8	0.00	2.0	2.8 H	4	LC
8RY8NN	56.4	58.8	57.4	57.7 L	57.6	-1.20	2.7	1.0	57.6	-1.20	2.7	1.0	4	TH
8YV2MM	61.2	60.3	61.3	62.1	61.2	0.74	3.4	0.7	61.2	0.74	3.4	0.7	4	XX
97Y7E7	58.6	62.5	58.6	60.2	60.0	0.07	3.2	1.8	60.0	0.07	3.2	1.8	4	LX
B8FECW	62.3	60.9	61.0	61.2	61.3	0.81	2.0	0.6	61.3	0.81	2.0	0.6	4	LD
B9T4E9	47.1 XH	45.6 X	46.6 X	No Data	46.4	-7.16 X	4.2	0.8	46.4	-7.16 X	4.2	0.8	3	TC
BA7FFY	57.9	58.5	56.1	58.5	57.8	-1.10	2.6	1.1	57.8	-1.10	2.6	1.1	4	LD
CUQWXJ	56.5 H	58.1 H	57.2	60.7	58.1	-0.90	5.0	1.8	58.1	-0.90	5.0	1.8	4	TG
D7YW8G	56.5	54.2 X	59.9	56.9	56.9	-1.57	3.2	2.3	56.9	-1.57	3.2	2.3	4	XX
EFZJXT	59.2	61.8	59.6	60.4	60.2	0.23	2.1	1.2	60.2	0.23	2.1	1.2	4	MB
F44X9A	57.1	61.3	58.7	57.1	58.5	-0.68	3.2	2.0	58.5	-0.68	3.2	2.0	4	LZ
FL43DX	61.3	60.4	64.4	60.7	61.7	1.01	3.4	1.8	61.7	1.01	3.4	1.8	4	LC
FQVE9T	63.1	62.0	74.2 XL	63.9	65.8	3.20 X	2.4	5.7 H	65.8	3.20 X	2.4	5.7 H	4	LE
FTLFCW	61.4	61.9	60.9	61.2	61.4	0.82	2.6	0.4	61.4	0.82	2.6	0.4	4	LC
H3ZAKU	68.9 XH	59.9	75.2 XH	66.5 *	67.6	4.18 X	6.3	6.3 H	67.6	4.18 X	6.3	6.3 H	4	LC
J666YR	62.0	61.2	61.7	61.9	61.7	1.01	2.4	0.4	61.7	1.01	2.4	0.4	4	LD
JA4DAT	59.4	58.7	59.4 H	58.4	59.0	-0.46	3.6	0.5	59.0	-0.46	3.6	0.5	4	LZ
KT6T4P	57.6	58.7	59.3	58.3	58.5	-0.71	2.8	0.7	58.5	-0.71	2.8	0.7	4	LC
KTNWFW	61.3 L	60.5 L	64.5 L	62.3 L	62.2	1.25	0.8	1.7	62.2	1.25	0.8	1.7	4	TD
KX464V	60.0	60.4	61.4	61.3 L	60.8	0.51	1.6	0.7	60.8	0.51	1.6	0.7	4	LC
LL34ZQ	57.5	58.2	59.9	64.0	59.9	0.04	3.2	2.9	59.9	0.04	3.2	2.9 H	4	LC
LUFAD9	58.4	61.1	56.7	63.2	59.9	0.02	2.9	2.9	59.9	0.02	2.9	2.9 H	4	MB
LVQWCM	63.1	65.0 *	65.5 *	62.2	63.9	2.21 *	2.7	1.5	63.9	2.21 *	2.7	1.5	4	EM

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	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
NGN3VX	57.4	58.3 L	58.4	58.3 L	58.1	-0.93	2.0	0.5	58.1	-0.93	2.0	0.5	4	LD
PHPPNT	63.7	61.1	62.8	61.7	62.3	1.34	3.7	1.2	62.3	1.34	3.7	1.2	4	LD
PL9KPZ	63.1	62.0 L	61.8	62.2 L	62.3	1.31	1.5	0.6	62.3	1.31	1.5	0.6	4	TH
PZAGMR	61.0	62.2	63.8	63.3	62.6	1.48	3.2	1.3	62.6	1.48	3.2	1.3	4	LC
QJH3NQ	58.6	61.4	62.5	61.0	60.9	0.57	3.1	1.6	60.9	0.57	3.1	1.6	4	LD
QM2XPX	59.3	58.9	61.2	63.2	60.7	0.45	2.7	2.0	60.7	0.45	2.7	2.0	4	MB
RDVBCQ	54.2 *	55.6 *	54.6 *	55.5 *	55.0	-2.59 *	3.0	0.7	55.0	-2.59 *	3.0	0.7	4	LD
RG8FNQ	64.6 *	62.1	62.6	63.0	63.1	1.74	2.6	1.1	63.1	1.74	2.6	1.1	4	LC
UM7LFY	43.8 XH	60.1	No Data	58.4	54.1	-3.06 X	3.8	9.0 H	54.1	-3.06 X	3.8	9.0 H	3	MB
UPEYZL	54.2 *	59.5	58.6	60.2	58.1	-0.89	4.3	2.7	58.1	-0.89	4.3	2.7 H	4	MB
UUU8NL	60.9	59.5	61.7	61.1	60.8	0.52	2.9	0.9	60.8	0.52	2.9	0.9	4	LC
WBPGKM	58.5	58.5	57.4	61.1	58.9	-0.50	3.4	1.5	58.9	-0.50	3.4	1.5	4	LD
WMWNXY	59.3	55.6 *	57.6	57.4	57.5	-1.26	2.9	1.5	57.5	-1.26	2.9	1.5	4	LD
YYL3CL	60.4	60.7	63.3	58.4 H	60.7	0.47	4.5	2.0	60.7	0.47	4.5	2.0	4	LC
ZTVC2B	56.6	58.6	56.4	57.3	57.2	-1.39	2.8	1.0	57.2	-1.39	2.8	1.0	4	LZ

Consensus (All Labs) Results

Wk Mean	59.31	59.94	60.07	60.35	Month Mean	59.81	Grand Mean	59.81
Avg SDr	2.95	3.05	3.05	3.47	Avg SDr	3.14	Avg SDr	3.14
SD btwn Labs	2.39	1.89	2.42	2.39	SD btwn Labs	1.87	SD btwn Labs	1.87
Labs Incld	47	48	46	49	SD btwn Wks	1.53	SD btwn Wks	1.53
Labs Excld	3	2	3	0	Labs Incld	46	Labs Incld	46
Labs not Rcvd	0	0	1	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LE	L&W CRUSH TESTER 275
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TD	TMI Digital Crush Tester, Model 17-09	TG	TMI Compression Tester, Model 17-10
TH	TMI Compression Tester, Model 17-76	XX	Instrument make/model not specified by lab

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Containerboard Interlaboratory Testing Program

Analysis 250

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

TAPPI Official Method T824

Report #565 (L)
October 2016

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2X6RCJ	73.8	75.0	74.2	73.7	74.2	0.38	2.8	0.6	74.2	0.38	2.8	0.6	4	XX
4H4U3K	69.5	70.3	69.4	70.6	69.9	-1.01	2.6	0.6	69.9	-1.01	2.6	0.6	4	LD
7CQTW8	71.7 L	72.2 L	70.7 L	70.4 L	71.2	-0.58	1.0	0.8	71.2	-0.58	1.0	0.8	4	XX
97Y7E7	75.1	73.6	73.9	75.6	74.5	0.51	2.3	0.9	74.5	0.51	2.3	0.9	4	LD
B8FECW	74.1	73.7	71.7	71.9	72.9	-0.04	2.3	1.2	72.9	-0.04	2.3	1.2	4	LD
FQVE9T	72.3	74.9	64.8 *L	74.2	71.5	-0.48	2.5	4.6 H	71.5	-0.48	2.5	4.6 H	4	LE
FTLFCW	70.5	70.7	71.3	71.0	70.9	-0.70	3.0	0.4 L	70.9	-0.70	3.0	0.4 L	4	LD
J666YR	70.8	71.7 H	72.0	71.9	71.6	-0.46	3.5	0.5	71.6	-0.46	3.5	0.5	4	XX
KTNWFW	73.3	71.5 L	74.7 L	72.1 L	72.9	-0.03	0.9	1.4	72.9	-0.03	0.9	1.4	4	TD
NGN3VX	67.7	68.5	68.0	68.1	68.1	-1.64	2.1	0.3 L	68.1	-1.64	2.1	0.3 L	4	LD
PHPPNT	76.9	78.0	76.8 H	77.8	77.4	1.46	3.3	0.6	77.4	1.46	3.3	0.6	4	LD
RDVBCQ	76.3	77.9	76.4	75.2	76.5	1.15	2.0	1.1	76.5	1.15	2.0	1.1	4	LD
RG8FNQ	76.4	75.0	74.7	73.5	74.9	0.63	2.9	1.2	74.9	0.63	2.9	1.2	4	XX
UPEYZL	70.9	72.8	71.5	71.9 L	71.7	-0.42	2.6	0.8	71.7	-0.42	2.6	0.8	4	MB
UUU8NL	75.7	76.7	76.4	76.5	76.3	1.10	2.5	0.4	76.3	1.10	2.5	0.4	4	LC
WBPGKM	78.0	77.7	76.8	80.2 *	78.2	1.71	2.5	1.4	78.2	1.71	2.5	1.4	4	LD
ZTVC2B	62.3 XH	62.1 XH	75.5	73.2 H	68.3	-1.57	5.5	7.1 H	68.3	-1.57	5.5	7.1 H	4	LZ

Consensus (All Labs) Results

Wk Mean	73.31	73.76	72.86	73.39
Avg SDr	2.63	2.69	2.43	2.53
SD btwn Labs	2.98	2.90	3.38	2.99
Labs Incld	16	16	17	17
Labs Excld	1	1	0	0
Labs not Rcvd	0	0	0	0

Month Mean	73.00
Avg SDr	2.78
SD btwn Labs	3.02
SD btwn Wks	2.21
Labs Incld	17

Grand Mean	73.00
Avg SDr	2.78
SD btwn Labs	3.02
SD btwn Wks	2.21
Labs Incld	17

Key to Instrument Codes Reported by Participants

LC	L&W Crush Tester 48
LD	L&W Crush Tester 248
LE	L&W CRUSH TESTER 275
LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440
TD	TMI Digital Crush Tester, Model 17-09
XX	Instrument make/model not specified by lab	

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Containerboard Interlaboratory Testing Program

Analysis 255

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

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2X6RCJ	41.7	43.3	42.5 H	42.8	42.6	-0.22	3.5	0.7	42.6	-0.22	3.5	0.7	4	LD
3XYVGE	44.6	43.5	43.6	43.7 H	43.8	0.31	3.2	0.5	43.8	0.31	3.2	0.5	4	LC
49CJQ4	43.0	42.7	44.1	42.9	43.2	0.04	2.0	0.6	43.2	0.04	2.0	0.6	4	LZ
4H4U3K	46.7	44.4	44.4	45.6	45.3	0.92	2.2	1.1	45.3	0.92	2.2	1.1	4	LD
4XDJFK	43.1	41.8	43.6	44.1	43.2	0.04	1.7	1.0	43.2	0.04	1.7	1.0	4	WK
69WD78	38.7	38.8	38.9	38.9	38.8	-1.77	3.4	0.1 L	38.8	-1.77	3.4	0.1 L	4	LD
8NZT66	40.6	39.0	38.7	38.6	39.2	-1.61	2.3	0.9	39.2	-1.61	2.3	0.9	4	LC
B9T4E9	30.1 *	28.2 XL	29.0 X	No Data	29.1	-5.85 X	2.1	1.0	29.1	-5.85 X	2.1	1.0	3	TC
BR3ZWK	42.6	42.6 H	42.9	42.2	42.6	-0.22	3.9	0.3	42.6	-0.22	3.9	0.3	4	LZ
D7YW8G	45.7	47.5	49.4	49.6 *	48.0	2.07 *	2.7	1.8	48.0	2.07 *	2.7	1.8	4	XX
EMK3U2	42.1	42.6	42.7	43.2	42.6	-0.18	1.9	0.4	42.6	-0.18	1.9	0.4	4	TH
F44X9A	42.2	43.7	42.3 L	42.4	42.6	-0.18	2.2	0.7	42.6	-0.18	2.2	0.7	4	EM
FL43DX	29.7 *	30.4 X	31.7 X	31.2 X	30.8	-5.16 X	2.9	0.9	30.8	-5.16 X	2.9	0.9	4	XX
H3ZAKU	42.5	46.1 H	43.9	44.9	44.3	0.53	3.4	1.5	44.3	0.53	3.4	1.5	4	LD
KX464V	47.1	47.8	43.4	44.5	45.7	1.09	1.7	2.1	45.7	1.09	1.7	2.1 H	4	LC
PHPPNT	46.1	45.6 L	46.2	45.2	45.8	1.13	1.6	0.5	45.8	1.13	1.6	0.5	4	LD
PL9KPZ	32.1 L	33.1 XL	32.8 *L	33.3 X	32.8	-4.29 X	1.1	0.5	32.8	-4.29 X	1.1	0.5	4	TH
PZAGMR	43.4	45.7	46.9	43.8	45.0	0.78	2.9	1.6	45.0	0.78	2.9	1.6	4	LD
RDVBCQ	40.8	41.6	42.6	42.6	41.9	-0.50	3.2	0.9	41.9	-0.50	3.2	0.9	4	LD
RG8FNQ	41.3	38.5	41.3	46.0	41.8	-0.55	2.3	3.1 H	41.8	-0.55	2.3	3.1 H	4	LC
UPEYZL	37.1	38.6	38.1	38.3	38.0	-2.11 *	3.5	0.6	38.0	-2.11 *	3.5	0.6	4	MB
UUU8NL	43.5	45.9	44.9	44.6	44.7	0.68	2.6	1.0	44.7	0.68	2.6	1.0	4	LC
UYM9PZ	44.1 L	43.7 L	41.6 L	42.6	43.0	-0.03	1.1	1.1	43.0	-0.03	1.1	1.1	4	WK
WMWNXY	43.2	42.7	42.7	41.6	42.5	-0.22	2.3	0.7	42.5	-0.22	2.3	0.7	4	LD

Consensus (All Labs) Results

Wk Mean	41.34	43.14	42.14	43.24	Month Mean	43.08	Grand Mean	43.08
Avg SDr	2.52	2.88	2.64	2.56	Avg SDr	2.66	Avg SDr	2.66
SD btwn Labs	4.75	2.78	4.00	2.60	SD btwn Labs	2.39	SD btwn Labs	2.39
Labs Incld	24	21	23	21	SD btwn Wks	1.23	SD btwn Wks	1.23
Labs Excld	0	3	2	2	Labs Incld	21	Labs Incld	21
Labs not Rcvd	0	0	0	1				

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Key to Instrument Codes Reported by Participants

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

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Containerboard Interlaboratory Testing Program

Analysis 261

STFI, 26 lb Corrugating Medium - CM91

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
4H4U3K	14.7	14.6	14.4	14.3	14.5	0.31	0.9	0.1	14.5	0.31	0.9	0.1	4	LA
4UUPED	14.3	13.9	14.0	14.9	14.3	0.01	1.1	0.5	14.3	0.01	1.1	0.5	4	LU
4XDJFK	14.2	14.8	15.2	15.1	14.8	0.75	0.7	0.5	14.8	0.75	0.7	0.5	4	LZ
72AACA	15.4	15.0	14.8	14.9	15.0	1.02	1.1	0.3	15.0	1.02	1.1	0.3	4	LW
8RY8NN	13.0	13.5	13.1	13.1	13.2	-1.47	0.7	0.2	13.2	-1.47	0.7	0.2	4	TT
97Y7E7	15.1	15.7	14.8	14.5	15.0	1.04	0.8	0.5	15.0	1.04	0.8	0.5	4	LB
B9T4E9	13.8 L	13.6 L	14.0 L	No Data	13.8	-0.64	0.0	0.2	13.8	-0.64	0.0	0.2	3	TS
BA7FFY	13.6	14.1	14.1	14.3	14.0	-0.34	1.0	0.3	14.0	-0.34	1.0	0.3	4	LU
BR3ZWK	14.6	14.9	14.9	14.4	14.7	0.62	1.0	0.3	14.7	0.62	1.0	0.3	4	LA
D7YW8G	15.0 L	15.4 L	14.6 L	14.7 L	14.9	0.91	0.0	0.4	14.9	0.91	0.0	0.4	4	XX
EFZJXT	15.7 L	16.2 *L	15.7 L	15.7 *L	15.8	2.08 *	0.2	0.3	15.8	2.08 *	0.2	0.3	4	BK
F44X9A	13.6	13.1	13.0	13.7	13.4	-1.22	1.0	0.4	13.4	-1.22	1.0	0.4	4	LZ
FTLFCW	13.3	13.2	13.0	13.4	13.2	-1.39	0.8	0.2	13.2	-1.39	0.8	0.2	4	LB
J666YR	13.4	13.3	13.2	13.5	13.3	-1.23	0.7	0.1	13.3	-1.23	0.7	0.1	4	LB
JA4DAT	13.1	14.5	14.6	14.4	14.2	-0.12	1.0	0.7	14.2	-0.12	1.0	0.7 H	4	LB
KX464V	13.8	14.1	13.6	13.1	13.7	-0.79	0.6	0.4	13.7	-0.79	0.6	0.4	4	XX
NGN3VX	13.2	12.8	12.9	13.0	13.0	-1.69	0.6	0.2	13.0	-1.69	0.6	0.2	4	LA
PZAGMR	15.7	15.6	15.0	15.0	15.3	1.42	1.0	0.4	15.3	1.42	1.0	0.4	4	LB
RDVBCQ	14.1	14.3	14.6	14.4	14.4	0.13	1.1	0.2	14.4	0.13	1.1	0.2	4	LA
RE2VZQ	14.8	14.0	15.6	14.8	14.8	0.74	1.4	0.7	14.8	0.74	1.4	0.7 H	4	LA
UM7LFY	14.6 L	14.0 L	No Data	13.9 L	14.2	-0.11	0.0	0.4	14.2	-0.11	0.0	0.4	3	LA
UUU8NL	14.3	14.2	14.6	14.0	14.3	0.05	1.0	0.2	14.3	0.05	1.0	0.2	4	LU
WMWNXY	14.3	15.0	13.8	13.8	14.2	-0.09	1.4	0.6	14.2	-0.09	1.4	0.6	4	LZ

Consensus (All Labs) Results

Wk Mean	14.25	14.34	14.24	14.23	Month Mean	14.26	Grand Mean	14.26
Avg SDr	0.81	0.96	0.87	0.93	Avg SDr	0.88	Avg SDr	0.88
SD btwn Labs	0.81	0.90	0.86	0.71	SD btwn Labs	0.74	SD btwn Labs	0.74
Labs Incld	23	23	22	22	SD btwn Wks	0.38	SD btwn Wks	0.38
Labs Excld	0	0	0	0	Labs Incld	23	Labs Incld	23
Labs not Rcvd	0	0	1	1				

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Key to Instrument Codes Reported by Participants

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

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