Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #559 (D) - April 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)

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	CM81	October 2015-Current
	CM73	December 2013-September 2015
36 lb Linerboard	36Z3	December 2014-Current
	36Z2	February 2012-October 2014
42 lb Linerboard	42D1	April 2015-Current
	42B4	May 2014-March 2015
69 lb Linerboard	69C2	March 2015-Current
	69C1	January 2014-January 2015

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
3BAGU7	681.7	-0.43	11.6	690.6	-0.51	50.2	3	EX
3KY3Z4	655.1	-0.85	13.1	729.3	0.09	56.2	4	LL
4AEV2E	635.6	-1.15	55.0	649.0	-1.15	40.9	4	ER
74J3JV	666.4	-0.67	44.6	656.5	-1.04	33.0	4	LS
AGA7CC	725.3	0.25	56.3	681.2	-0.65	54.2	4	LM
BFEMAA	663.6	-0.72	22.5	689.8	-0.52	53.6	4	LG
BRAWVX	671.5	-0.59	17.5	704.3	-0.29	28.1	3	LH
DDJ7L7	653.4	-0.87	17.3	698.6	-0.38	51.0	4	ES
ERXQKP	735.5	0.41	69.9	770.4	0.73	46.9	3	TE
H36FCQ	809.4	1.56	101.9	864.4	2.19 *	60.9	3	EX
MP8XNM	669.1	-0.63	25.6	661.8	-0.95	28.1	3	ER
NQAHPR	652.8	-0.88	85.9	655.1	-1.06	58.9	4	LL
P76WPL	741.6	0.50	24.7	711.9	-0.18	31.4	4	ER
PQ889F	840.4	2.05 *	71.3	852.8	2.01 *	58.2	4	TB
QMNC6M	788.2	1.23	9.4	784.9	0.96	14.6	4	ER
TWNLPH	710.4	0.02	51.4	735.1	0.18	50.8	4	LM
W3HQ8C	643.4	-1.03	77.9	643.5	-1.24	47.9	4	LS
WNGDCD	699.4	-0.16	35.9	697.7	-0.40	56.5	4	EX
X3CV2B	816.6	1.68	11.8	811.6	1.37	41.9	4	LG
XUHMH7	693.3	-0.25	36.6	747.2	0.37	53.1	4	ET
YAQ43D	802.0	1.45	44.8	787.7	1.00	41.9	3	LH
ZUCE3G	651.3	-0.91	46.3	687.8	-0.55	48.8	4	ER

Consensus (All Labs) Results

Month Mean	709.37	Grand Mean	723.23
Avg SDr	49.70	Avg SDr	47.28
SD btwn Labs	64.00	SD btwn Labs	64.43
Labs Incld	22	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	728.35	93.75	18.98	4
Clip sealing	687.16	40.48	22.21	15
Tape sealing	795.10	53.89	85.73	3

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		

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2DLUY3	34.1	-1.51	0.5	32.8	-1.89	1.9	2	XX
74J3JV	37.7	-0.78	2.4	40.1	-0.40	2.2	3	EM
BFEMAA	43.8	0.49	1.1	45.0	0.62	1.4	3	LZ
KAGDUU	48.6	1.48	2.7	48.6	1.35	2.7	1	LC
MP8XNM	46.5	1.04	2.1	45.6	0.73	1.8	2	EN
RLQLCE	40.1	-0.27	1.6	42.1	0.01	1.9	2	XX
W3HQ8C	42.6	0.24	1.1	43.3	0.26	1.4	3	LC
XXH24A	38.1	-0.69	1.4	38.7	-0.68	1.3	3	WK

Consensus (All Labs) Results

Month Mean	41.43	Grand Mean	42.01
Avg SDr	1.75	Avg SDr	1.86
SD btwn Labs	4.85	SD btwn Labs	4.88
Labs Incld	8	Labs Incld	8

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LZ	L&W Crush Tester (model not specified)
WK	Zwick Z005 Crush Tester	XX	Instrument make/model not specified by lab

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2DLUY3	34.0	-5.20 X	0.7	32.9	-7.07 X	1.9	2	XX
3486X9	46.2	-0.08	1.6	44.8	-0.76	2.2	3	LD
3BAGU7	47.5	0.48	1.1	46.7	0.23	0.9	2	TL
3CQBW2	47.6	0.51	1.6	47.2	0.53	1.5	3	LD
3KY3Z4	46.1	-0.11	1.1	48.2	1.04	1.3	3	BU
4AEV2E	48.0	0.66	1.4	47.8	0.79	1.8	3	LD
4VDJ6F	44.8	-0.65	1.5	46.3	0.00	1.4	3	LD
6Z2LN7	43.0	-1.41	1.0	37.8	-4.44 X	1.6	3	TD
74J3JV	48.9	1.04	1.1	44.5	-0.92	1.6	3	EM
8UMM8W	45.2	-0.49	0.6	44.7	-0.82	1.1	3	TB
AGA7CC	43.0	-1.42	2.0	46.0	-0.14	1.8	3	EM
BFEMAA	44.1	-0.96	2.4	45.1	-0.63	1.9	3	LZ
BRAWVX	45.3	-0.44	3.1	46.9	0.36	2.5	2	EM
C3NDZA	43.8	-1.09	2.0	44.6	-0.87	2.0	2	LD
DDJ7L7	47.2	0.35	1.4	47.2	0.50	1.6	3	LD
F48QT3	43.5	-1.21	1.5	43.7	-1.36	1.6	3	LC
H36FCQ	45.8	-0.23	2.0	46.4	0.06	2.4	3	CT
JEDHBT	46.0	-0.14	2.7	43.6	-1.40	2.9	3	LC
KAGDUU	52.4	2.50 *	1.4	43.9	-1.26	1.6	3	LC
KNGCHQ	50.1	1.54	2.3	47.4	0.60	2.1	3	LC
MP8XNM	49.6	1.36	1.8	47.7	0.75	2.2	2	EN
NFBGCN	46.0	-0.14	1.7	46.9	0.36	1.4	2	LC
NQAHPR	48.7	0.98	1.2	48.9	1.42	2.2	3	LC
NTE3ED	47.3	0.38	1.0	47.8	0.81	1.4	3	EM
P76WPL	45.4	-0.42	1.3	44.5	-0.90	1.6	3	TB
PPX3VR	47.1	0.28	1.1	46.5	0.15	0.8	2	TM
PQ889F	47.9	0.64	0.6	49.5	1.71	0.7	3	LC
QMNC6M	42.1	-1.79	0.9	42.6	-1.95	0.9	3	EM
TL68LF	49.2	1.17	1.0	50.1	2.01 *	1.4	3	LC
TWNLPH	47.1	0.28	1.3	48.2	1.03	1.3	3	TG
UPJ33D	47.2	0.32	0.9	45.5	-0.41	0.7	3	LC
VM8PXG	45.0	-0.57	1.2	45.3	-0.48	1.4	3	TG
W3HQ8C	45.3	-0.45	1.1	46.2	-0.05	1.3	3	LC
WNGDCD	46.6	0.10	1.2	45.6	-0.34	1.2	3	LD
WT8NLB	43.5	-1.22	1.5	44.1	-1.12	1.3	3	EX
X3CV2B	46.3	-0.05	2.7	46.1	-0.10	2.5	3	EM
XUHMH7	51.6	2.19 *	2.0	50.7	2.36 *	2.0	3	TD
YTKWMB	45.6	-0.33	1.9	46.0	-0.12	2.1	3	TK
ZUCE3G	42.7	-1.55	3.3	44.2	-1.08	2.5	3	EN

Consensus (All Labs) Results

Month Mean	46.38	Grand Mean	46.25
Avg SDr	1.68	Avg SDr	1.74
SD btwn Labs	2.39	SD btwn Labs	1.89
Labs Incld	38	Labs Incld	37

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
TB	TMI Monitor/Compression Tester, Model 17-70	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
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	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
29AQBL	100.4 *	104.3	109.3	108.9	105.7	-1.03	12.8	4.2	107.4	-0.80	11.9	5.0	16	LA
2M9RP8	107.6	115.8 H	109.0	102.0	108.6	-0.26	14.3	5.7	106.3	-1.19	13.5	4.5	12	XX
3486X9	112.3	110.6	115.9	115.8	113.7	1.09	11.5	2.6	112.2	0.85	9.9	3.2	16	AA
3CQBW2	116.4	117.8	110.7	115.0	115.0	1.44	9.8	3.1	113.8	1.40	8.8	3.9	8	LA
4AEV2E	107.3	108.0	109.2	106.1	107.7	-0.52	8.5	1.3	112.3	0.89	10.8	5.4	16	AH
74J3JV	100.8	94.5 X	105.3	101.5	100.5	-2.43 *	8.6	4.5	108.1	-0.58	9.3	9.9 H	16	RE
7LJTZY	110.6	110.2	107.7	104.3	108.2	-0.37	9.4	2.9	109.0	-0.26	8.5	2.5	16	AH
7LLMJ6	110.1 L	103.6	110.7 L	113.8	109.6	-0.01	5.5	4.3	112.7	1.01	5.1	5.4	12	LA
7PGEPG	105.8	105.5	105.1	102.8	104.8	-1.28	6.8	1.4	105.4	-1.48	7.9	2.9	16	TB
7PJ4VY	107.3	105.2	108.6	108.0	107.3	-0.62	10.7	1.5	109.8	0.01	9.9	2.5	16	TP
7Y73M6	109.3	109.4	109.5	109.4	109.4	-0.05	6.6	0.1 L	109.5	-0.08	6.6	0.1 L	16	LJ
868XJA	109.0	113.0	105.4	108.6	109.0	-0.15	11.4	3.1	110.1	0.14	10.1	3.7	12	LC
AABJLW	104.4	107.0 L	106.0	112.0 L	107.4	-0.60	5.2	3.3	108.2	-0.52	5.3	2.8	16	RE
AGA7CC	105.8	103.1	107.6	102.1	104.7	-1.31	8.3	2.5	106.0	-1.29	9.5	2.7	16	AH
AVBH8B	111.7	106.4	96.2 X	107.0	105.3	-1.14	10.5	6.5	105.7	-1.37	10.6	6.6	12	LC
AVFY6A	106.7 L	107.5 L	108.0 L	107.6 L	107.5	-0.56	2.5	0.5 L	108.2	-0.51	7.7	1.7	16	LA
BFEMAA	115.9	116.4	110.3 L	108.6	112.8	0.87	11.5	3.9	113.8	1.40	12.1	2.8	16	LZ
BXGMX4	108.7	109.7	110.4	109.9	109.7	0.02	9.8	0.7	109.7	-0.02	11.2	3.5	16	LA
C3NDZA	107.7	104.6	107.3	107.4	106.8	-0.75	6.3	1.5	105.8	-1.34	9.7	1.9	16	LA
CLELX6	101.8	102.2	105.9	106.6	104.1	-1.46	12.3	2.5	106.2	-1.22	11.8	3.1	16	LC
DDJ7L7	109.4	109.5	109.9	109.4	109.6	-0.01	9.0	0.2 L	110.7	0.33	11.1	2.6	16	LA
ECNMK6	107.7	104.3	108.0	107.1	106.8	-0.75	11.7	1.7	109.3	-0.15	12.2	5.1	15	TB
F48QT3	111.7	111.0	114.2	109.5	111.6	0.54	13.5	1.9	111.0	0.45	11.7	3.4	16	LC
FTAPFY	116.5	107.6	106.6	117.5	112.0	0.65	9.9	5.7	112.3	0.87	10.9	3.3	16	LC
GD9DKZ	113.6	108.8	106.4	110.4	109.8	0.06	12.0	3.0	110.1	0.12	11.3	2.7	16	AH
GHHQ2Y	105.3	108.4	107.0	108.3	107.3	-0.62	8.5	1.4	105.8	-1.37	10.4	1.8	16	LA
H36FCQ	116.4	117.9	122.8 X	114.9	118.0	2.25 *	12.0	3.4	114.7	1.70	14.1	3.2	16	XX
HUEU7R	108.2	112.1	109.8	109.1	109.8	0.06	11.4	1.7	108.7	-0.36	11.5	7.6 H	16	LJ
JKK9DY	106.4	106.3	107.8	106.4	106.7	-0.76	12.8	0.7	107.7	-0.71	11.3	3.3	15	LZ
JQQ6WY	106.7	No Data	No Data	109.8	108.3	-0.35	8.7	2.2	109.2	-0.17	10.3	3.3	14	LC
JTYUM3	111.2	109.2 H	110.9	112.6	111.0	0.37	14.5	1.4	108.5	-0.44	12.2	2.5	12	AX
K7H3YU	111.9	110.5	108.9	111.0	110.6	0.27	11.5	1.2	109.5	-0.08	12.2	3.0	16	LA
KAGDUU	111.9	113.9	116.2	106.1	112.0	0.66	11.0	4.3	110.9	0.39	11.2	3.3	16	LA
L4NT4J	111.2	111.6	104.6	113.1	110.1	0.14	8.0	3.8	108.5	-0.44	9.3	6.3	13	LC
LGX9BN	107.3	104.2	107.0	101.5	105.0	-1.23	11.2	2.7	108.7	-0.36	10.4	5.5	8	LJ

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D1

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
MFXTBW	108.2	106.4	114.0	109.2	109.5	-0.03	10.8	3.2	107.3	-0.84	10.6	2.6	16	AH
MZ6X2R	70.6 X	96.2 X	110.4	108.8	96.5	-3.50 X	10.2	18.4 H	105.2	-1.56	11.5	12.4 H	12	LA
NEFYBM	111.6	116.3	114.6	111.1	113.4	1.03	9.0	2.4	112.2	0.85	9.1	2.6	16	LC
P76WPL	105.8	101.7	106.6	106.1	105.1	-1.21	9.2	2.3	105.6	-1.43	10.6	2.6	16	LA
PFA44L	110.5 H	120.8 *	118.9 *	112.9	115.8	1.66	11.3	4.9	114.5	1.64	11.9	4.1	16	LC
PGGL3H	112.6	110.2	112.9 L	115.1 L	112.7	0.83	4.9	2.0	113.0	1.12	5.1	1.8	16	XX
PZEMEN	107.2	108.6	109.8	109.7	108.8	-0.20	11.3	1.2	108.2	-0.51	10.7	2.0	16	LC
QF2LJT	113.0	114.4	109.5	115.6	113.1	0.94	14.1	2.7	111.4	0.59	12.5	2.4	15	TB
T7AM6R	104.5	111.0	114.1	110.0	109.9	0.09	10.1	4.0	108.4	-0.46	11.3	3.0	16	LA
UCU6ZE	100.0 *	109.4	No Data	No Data	104.7	-1.31	10.1	6.6 H	105.4	-1.48	7.9	4.0	14	AX
W3HQ8C	99.3 *	104.3	102.3	106.1	103.0	-1.76	8.0	2.9	105.5	-1.45	10.1	3.2	16	AH
WNGDCD	108.7	106.0	109.5	109.5	108.4	-0.31	11.6	1.7	111.6	0.66	10.8	6.0	12	AH
WYKAUH	111.5	109.2 L	118.3 *H	121.8 *	115.2	1.50	12.4	5.9	111.2	0.52	7.9	3.9	16	LA
X6GNTN	111.8	107.2	107.6	109.2	108.9	-0.17	10.9	2.1	108.7	-0.37	10.2	1.9	16	LB
XCYURG	111.6	107.8	112.1	116.3	112.0	0.63	11.1	3.5	111.4	0.58	12.6	2.6	16	LZ
Y39VDF	110.8	No Data	No Data	No Data	110.8	0.32	7.8	0.0 L	113.8	1.40	11.4	2.1	12	LA
Y9VH9L	113.5	111.9	117.3	117.3	115.0	1.45	8.2	2.8	113.3	1.23	9.2	2.8	16	LC
YAQ43D	112.3	114.8	113.0	111.5	112.9	0.88	12.8	1.4	114.8	1.75	12.8	2.6	12	AA
YPMFBG	112.0	114.9	118.4 *	122.1 *	116.8	1.94	10.0	4.3	111.8	0.71	9.8	7.1 H	16	LC
ZFRYYH	117.5	114.0	114.6	115.0	115.3	1.52	11.2	1.5	116.3	2.25 *	11.8	4.5	16	LA

Consensus (All Labs) Results

Wk Mean	109.21	109.50	110.06	110.03	Month Mean	109.58	Grand Mean	109.73
Avg SDr	10.83	9.81	10.12	10.88	Avg SDr	10.36	Avg SDr	10.51
SD btwn Labs	4.23	4.44	3.91	4.67	SD btwn Labs	3.74	SD btwn Labs	2.90
Labs Incld	54	51	50	53	SD btwn Wks	3.18	SD btwn Wks	4.26
Labs Excld	1	2	2	0	Labs Incld	54	Labs Incld	55
Labs not Rcvd	0	2	3	2				

Key to Instrument Codes Reported by Participants

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

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
29AQBL	74.5	76.5	79.8	80.6	77.9	-0.27	4.7	2.9	79.7	0.25	5.5	2.3	12	LA
2M9RP8	77.9	74.5	75.7	72.0	75.0	-1.19	5.4	2.4	75.5	-1.27	5.3	2.3	12	XX
3486X9	82.3	81.3	79.6	79.0	80.6	0.61	6.4	1.5	80.5	0.57	6.2	2.3	12	AA
3CQBW2	77.0	77.7	79.5	76.3 H	77.6	-0.35	6.0	1.4	77.6	-0.49	6.0	1.4	4	LA
4AEV2E	77.5	78.3	80.0	77.7	78.4	-0.10	4.2	1.1	79.7	0.27	4.7	3.2	12	AH
74J3JV	71.0 *L	72.3	74.0	73.7	72.7	-1.93	4.6	1.4	76.1	-1.03	5.4	3.1	12	RE
7LJTZY	79.0	79.9	79.6	80.1	79.7	0.31	3.2	0.5	79.8	0.32	4.0	0.6	12	AH
7LLMJ6	77.1	81.8	78.3	80.4	79.4	0.23	5.1	2.1	81.5	0.92	5.0	3.5	8	LA
7PGEPG	80.6	76.9	82.1	75.2	78.7	0.00	4.9	3.2	78.6	-0.12	5.6	3.2	12	TB
7PJ4VY	76.1	77.9	76.9	76.4	76.8	-0.60	4.7	0.8	76.9	-0.74	4.0	1.3	12	TP
7Y73M6	79.3	79.4	79.4	79.7	79.4	0.24	3.5	0.2 L	78.9	-0.03	3.7	0.4 L	12	LJ
868XJA	80.3	76.2 H	75.7	77.5	77.4	-0.41	5.8	2.1	79.1	0.05	5.7	3.2	12	LC
AABJLW	81.8	83.8	83.2	85.6	83.6	1.60	4.8	1.6	83.7	1.73	4.6	2.6	12	RE
AGA7CC	78.1	74.9	77.1	73.0	75.8	-0.95	4.1	2.3	77.7	-0.46	5.0	2.1	12	AH
AVBH8B	74.4	74.6 H	No Data	No Data	74.5	-1.35	7.7	0.1 L	75.9	-1.11	5.4	3.0	10	LC
AVFY6A	82.6	80.8	82.4 L	80.1 L	81.5	0.90	2.3	1.2	80.1	0.41	2.1	2.0	12	LA
BFEMAA	82.1	82.7	82.3	81.9	82.3	1.16	6.3	0.4	82.5	1.29	5.3	0.6	10	LZ
BXGMX4	79.7	82.2	78.7	81.2	80.4	0.57	4.6	1.6	79.4	0.15	4.7	1.4	12	LA
C3NDZA	79.6	78.9	78.1	76.0 L	78.2	-0.17	3.5	1.6	77.0	-0.71	3.8	1.7	12	LA
CLELX6	78.3	75.4	79.9	74.7	77.1	-0.52	4.8	2.4	76.7	-0.82	5.3	1.9	12	LC
DDJ7L7	80.2	82.6	81.5	81.0	81.3	0.86	5.0	1.0	78.8	-0.04	5.2	2.1	12	LA
ECNMK6	75.6	76.7	80.3	74.5	76.8	-0.62	6.6	2.5	76.6	-0.86	6.0	1.9	12	TB
F48QT3	79.6	80.5	80.2	81.6	80.5	0.58	4.8	0.8	78.7	-0.08	5.4	2.3	12	LC
FTAPFY	76.2	81.6	78.2	81.5	79.4	0.23	6.8	2.6	79.9	0.34	6.1	1.8	12	LC
GD9DKZ	79.2 L	77.2	78.8	80.2	78.9	0.05	5.0	1.2	78.2	-0.26	5.1	2.5	12	AH
GHHQ2Y	75.4	76.5	79.9	76.0	76.9	-0.56	6.0	2.0	77.4	-0.57	5.5	1.9	8	LA
H36FCQ	86.6 *	85.2	79.2 H	78.2 H	82.3	1.17	9.4	4.2 H	84.6	2.06 *	6.7	3.8	12	XX
HUEU7R	79.3	75.1	79.8	77.9	78.0	-0.21	4.7	2.1	77.4	-0.56	4.6	1.9	12	LJ
JKK9DY	68.2 X	73.0	73.5 *	72.6	71.8	-2.23 *	4.9	2.5	76.0	-1.08	4.9	3.5	12	LZ
JQQ6WY	75.6	No Data	No Data	75.8	75.7	-0.98	4.9	0.1 L	77.5	-0.53	5.2	1.6	10	LC
JTYUM3	72.6	75.8	75.0	76.8	75.1	-1.18	5.7	1.8	75.5	-1.25	5.2	1.6	8	AX
K7H3YU	78.5	81.8	76.2	76.1	78.1	-0.18	5.5	2.7	78.7	-0.09	5.8	1.9	12	LA
KAGDUU	81.0	80.8	81.6	78.7	80.5	0.60	5.3	1.3	81.5	0.91	5.9	8.5 H	11	LA
L4NT4J	77.8	77.9	78.8	80.9	78.9	0.05	5.3	1.4	77.6	-0.51	5.0	3.0	12	LC
LGX9BN	73.6	77.0	77.4	73.4	75.3	-1.09	5.2	2.1	75.3	-1.32	5.2	2.1	4	LJ

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
MFXTBW	75.0	79.9	79.1	76.8	77.7	-0.32	6.3	2.2	74.4	-1.64	5.3	3.1	12	AH
MZ6X2R	70.6 *	73.4	79.0	80.0	75.8	-0.95	4.8	4.5 H	77.3	-0.59	4.6	5.1 H	12	LA
NEFYBM	86.6 *	83.7	84.0	88.1 *	85.6	2.25 *	4.6	2.1	85.6	2.41 *	4.5	1.5	12	LC
P76WPL	74.9	74.9	77.4	74.3	75.4	-1.08	4.6	1.4	74.6	-1.60	6.0	1.7	12	LA
PFA44L	80.0	80.1	80.5	75.3	79.0	0.09	5.0	2.5	79.7	0.26	5.1	2.1	12	LC
PGGL3H	85.3	82.8	83.5	86.1 *	84.4	1.86	4.6	1.5	83.1	1.52	4.5	1.6	12	XX
PZEMEN	77.8	75.0	76.2	78.6	76.9	-0.58	4.4	1.6	76.8	-0.78	5.1	1.9	12	LC
QF2LJT	80.7	79.5	83.1	81.5	81.2	0.82	4.7	1.5	81.2	0.83	5.3	1.5	12	TB
T7AM6R	77.9	75.7	75.7	74.0	75.8	-0.93	6.0	1.6	77.9	-0.37	5.9	2.0	12	LA
UCU6ZE	76.1	78.0	No Data	No Data	77.1	-0.53	4.2	1.4	78.1	-0.29	4.9	2.5	10	AX
W3HQ8C	75.0	73.1	70.9 X	73.1	73.0	-1.84	5.4	1.7	74.1	-1.76	5.2	2.6	12	AH
WNGDCD	80.3	79.0	78.5	78.0	79.0	0.09	3.6	1.0	81.5	0.94	4.8	3.1	8	AH
WYKAUH	78.9	82.4	80.7	82.9	81.2	0.83	4.2	1.8	80.4	0.54	4.1	1.2	12	LA
X6GNTN	77.5	76.7	75.3	75.2	76.2	-0.82	3.3	1.1	77.0	-0.72	3.7	1.6	12	LB
XCYURG	79.2	84.3	81.2	80.9	81.4	0.88	6.4	2.1	80.0	0.39	6.1	2.1	12	LZ
Y39VDF	84.4	No Data	No Data	No Data	84.4	1.87	6.2	0.0 L	83.3	1.59	6.6	2.2	9	LA
Y9VH9L	82.1	83.8	80.6 H	84.0	82.6	1.28	7.8	1.6	82.8	1.40	6.1	1.5	12	LC
YAQ43D	84.8	82.8	84.8 *	82.3	83.6	1.60	5.3	1.3	83.3	1.56	5.0	1.7	12	AA
YPMFBG	77.9	76.2	79.0	82.8	79.0	0.09	5.5	2.8	77.3	-0.60	5.3	2.5	12	LC
ZFRYYH	80.2 H	82.9	82.9	82.5	82.1	1.12	5.8	1.3	83.2	1.56	5.4	2.1	12	LA

Consensus (All Labs) Results

Wk Mean	78.62	78.72	79.28	78.51	Month Mean	78.69	Grand Mean	78.95
Avg SDr	5.09	5.12	5.83	4.98	Avg SDr	5.31	Avg SDr	5.21
SD btwn Labs	3.52	3.40	2.63	3.74	SD btwn Labs	3.08	SD btwn Labs	2.75
Labs Incld	54	53	50	52	SD btwn Wks	1.95	SD btwn Wks	2.58
Labs Excld	1	0	1	0	Labs Incld	55	Labs Incld	55
Labs not Rcvd	0	2	4	3				

Key to Instrument Codes Reported by Participants

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

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
29AQBL	91.8	92.1	96.1	91.1	92.8	1.09	4.2	2.3	94.1	1.50	5.3	14.7 H	16	LC
2DLUY3	73.5 *L	73.8 *L	73.6 *L	74.8 *	74.0	-2.54 *	1.8	0.6	66.4	-5.18 X	1.5	8.2 H	8	XX
2M9RP8	86.4	85.4	85.9	88.9	86.7	-0.09	3.4	1.6	86.8	-0.25	3.8	1.3	12	LC
3486X9	84.7	82.8	84.1	85.7	84.3	-0.54	3.6	1.2	85.2	-0.63	3.0	1.5	16	LD
3CQBW2	95.8 L	96.8	94.4	94.7	95.4	1.60	2.8	1.1	93.2	1.28	3.3	2.8	8	LD
4AEV2E	83.3	83.1	83.1	83.7	83.3	-0.74	3.2	0.3 L	85.3	-0.63	3.6	1.9	16	LD
6Z2LN7	91.4 L	91.7 L	94.2 L	91.9 L	92.3	0.99	1.2	1.3	92.5	1.11	1.5	1.5	16	TD
74J3JV	88.2	84.8	88.7	86.7	87.1	-0.01	3.2	1.8	84.7	-0.76	3.7	2.1	16	EM
7LG3TG	75.8	75.1 *	74.7 *	77.4	75.7	-2.20 *	4.0	1.2	77.0	-2.62 *	5.9	2.3	12	MB
7LLMJ6	93.2	90.3	93.1	91.4	92.0	0.94	4.4	1.4	91.9	0.96	4.2	2.2	12	LD
7PGEPG	91.6	90.2	101.5 *	100.1 *	95.8	1.67	4.8	5.8	95.2	1.76	4.7	2.9	16	LX
7PJ4VY	87.7	85.7	87.3	87.7	87.1	-0.01	3.7	1.0	87.3	-0.14	3.6	1.1	16	TH
7Y73M6	87.7	87.8	87.9	87.8	87.8	0.13	5.1	0.1 L	87.2	-0.15	3.9	0.9	16	LD
868XJA	83.7 H	91.4	91.1	No Data	88.8	0.31	6.5	4.3	89.6	0.43	6.3	2.8	11	LZ
9Q7LMB	89.7	87.8	89.2	90.0	89.1	0.39	4.0	1.0	89.6	0.41	3.7	1.0	16	LD
AABJLW	92.5	93.2	91.0	89.8	91.6	0.86	3.8	1.5	93.3	1.30	3.6	3.2	16	LZ
AGA7CC	88.7	89.0	87.5	89.9	88.8	0.32	3.7	1.0	89.3	0.36	3.9	2.7	16	EM
AMZJDY	96.7	94.6	97.5	99.9 *	97.1	1.93	4.2	2.2	93.3	1.30	4.9	5.4	12	MB
AVBH8B	87.4	79.6	85.0	82.6	83.7	-0.67	4.7	3.3	88.5	0.15	4.3	6.0	12	LD
AVFY6A	85.3	83.9 L	84.7	83.4	84.3	-0.54	2.3	0.8	83.9	-0.96	2.9	1.1	16	LD
BFEMAA	86.3	83.9	81.9	85.4	84.4	-0.53	2.9	1.9	86.6	-0.29	3.4	1.9	16	LC
BRAWVX	83.2	82.8	85.1	83.8	83.7	-0.66	4.6	1.0	87.9	0.00	4.6	3.5	12	EM
BXGMX4	96.2	96.9	94.6	95.3	95.8	1.66	4.1	1.0	94.7	1.64	4.1	2.7	16	LD
C3NDZA	86.0	82.1	87.8	88.5	86.1	-0.20	3.9	2.9	89.0	0.27	3.3	2.3	16	LD
C9U7U7	84.4 L	85.7	85.0	86.1	85.3	-0.36	2.1	0.7	84.8	-0.75	2.9	1.1	16	LD
CLELX6	86.9	88.2	87.6	84.4	86.8	-0.07	2.9	1.7	87.2	-0.15	4.0	1.4	16	LD
CPGMX3	85.8	87.2	No Data	No Data	86.5	-0.12	3.9	1.0	88.9	0.26	4.5	2.3	8	EX
ECNMK6	84.0	No Data	86.2	84.1	84.8	-0.45	3.2	1.2	82.0	-1.42	3.4	5.8	14	LZ
ERXQKP	88.3	89.8	87.1	88.5	88.4	0.25	4.0	1.1	88.1	0.06	3.5	1.7	12	LD
F48QT3	91.4	89.9	84.6	85.1	87.7	0.12	3.5	3.4	89.5	0.38	3.8	2.4	16	LD
GD9DKZ	82.0	90.5	88.2 H	89.8	87.6	0.09	5.8	3.9	90.7	0.68	5.1	4.1	16	LC
GHHQ2Y	82.4	83.7	84.0	84.1	83.6	-0.69	3.8	0.8	83.5	-1.05	3.6	1.6	16	LD
H44KTK	91.0 L	87.3	89.0	87.8	88.8	0.32	2.5	1.7	87.1	-0.17	2.6	1.6	12	WK
HUEU7R	78.2	72.7 *	81.2	72.9 *	76.3	-2.10 *	4.0	4.2	82.7	-1.25	4.9	9.1 H	16	LC
HWGTGK	86.1	89.7	88.9	93.4	89.5	0.46	4.7	3.0	89.5	0.41	4.7	3.0	4	XX

Containerboard Interlaboratory Testing Program
Analysis 215
Ring Crush, 42 lb Linerboard - 42D1
TAPPI Official Test Method T822

Report #559 (D)
April 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
JKK9DY	87.8	89.6	91.5	91.0	90.0	0.55	3.5	1.7	83.4	-1.08	4.2	6.1	16	LC
JQQ6WY	93.1	No Data	No Data	91.4	92.3	0.99	4.2	1.2	92.9	1.21	3.8	2.8	14	LC
JTYUM3	82.8 L	78.0	80.3	88.6	82.4	-0.91	4.6	4.6	81.1	-1.63	6.4	5.4	12	LC
KAGDUU	96.7	92.0	98.2 H	101.3 *	97.1	1.91	5.9	3.9	90.9	0.72	5.2	7.3 H	16	LC
L4NT4J	94.4	94.9	87.1	92.3	92.2	0.97	3.5	3.6	93.5	1.37	4.0	2.8	13	LD
LGX9BN	86.2	84.8	85.2	84.6	85.2	-0.38	3.9	0.7	84.7	-0.77	3.3	1.6	8	LD
MZ6X2R	78.2 H	67.1 XH	99.1 *	88.9	83.3	-0.74	8.1	13.8 H	90.0	0.52	7.4	9.0 H	12	LC
NEFYBM	91.2	93.9	97.6	97.6	95.0	1.52	3.4	3.1	93.5	1.36	3.7	3.3	16	TC
P76WPL	82.1	84.0	84.0	86.3	84.1	-0.59	4.2	1.7	80.7	-1.72	5.6	5.2	16	LD
PGGL3H	85.6	86.6	88.6	92.2	88.3	0.21	4.1	2.9	90.7	0.68	4.1	4.8	16	LD
QF2LJT	86.5	85.7	86.1	82.1	85.1	-0.39	4.3	2.0	86.8	-0.26	4.2	2.4	15	LC
QMNC6M	78.6 L	78.7	79.4	78.3	78.8	-1.62	2.0	0.5 L	81.3	-1.59	2.3	1.8	16	EX
T7AM6R	85.6	87.4	88.4	85.7	86.8	-0.07	4.1	1.4	87.7	-0.04	3.4	1.6	16	LC
UCU6ZE	99.2 *	98.2 *	No Data	No Data	98.7	2.23 *	4.1	0.7	97.6	2.34 *	4.7	3.1	14	LZ
UMR7DJ	79.9	83.2	79.4	81.8	81.1	-1.17	3.3	1.7	83.2	-1.13	4.0	1.7	16	LD
VM8PXG	90.1	88.1	89.4	89.2	89.2	0.40	3.2	0.8	88.1	0.05	3.1	1.8	16	TH
VWXB4E	91.1	91.1	88.8	88.8	89.9	0.54	3.8	1.3	89.0	0.27	4.2	1.4	16	EM
W3HQ8C	81.8 H	88.5	85.0	88.5	85.9	-0.24	13.2	3.2	87.4	-0.12	7.4	2.2	16	LC
WYKAUH	88.6	88.7	88.8	87.9	88.5	0.26	3.0	0.4 L	88.1	0.07	2.4	1.3	16	LZ
X2GCYA	80.2	89.3	No Data	77.0	82.2	-0.96	4.4	6.4 H	83.3	-1.10	4.6	5.9	15	LC
X3CV2B	84.8	83.6	83.4	83.1	83.7	-0.66	3.4	0.7	84.4	-0.84	3.4	1.5	16	EM
X6GNTN	87.5	87.6	90.7	88.3	88.5	0.27	3.5	1.5	88.1	0.06	4.5	2.4	16	LC
YPMFBG	84.6	88.4	84.6	85.0	85.7	-0.29	5.1	1.8	85.8	-0.50	4.2	1.7	16	LC
YTKWMB	74.4 *	81.0	82.3	80.7	79.6	-1.46	4.3	3.5	74.9	-3.13 X	4.8	5.9	12	MB
ZFRYYH	87.6	86.7 H	88.1	90.3	88.2	0.20	5.3	1.5	88.8	0.22	4.4	2.6	16	LZ
ZUCE3G	84.7	79.8	80.6	79.4	81.1	-1.16	4.1	2.4	83.3	-1.11	3.9	2.3	16	EN

Consensus (All Labs) Results

	Week 1	Week 2	Week 3	Week 4				
Wk Mean	86.73	86.88	87.51	87.36	Month Mean	87.14	Grand Mean	87.86
Avg SDr	5.47	3.87	3.86	3.83	Avg SDr	4.36	Avg SDr	4.26
SD btwn Labs	5.48	5.44	5.64	5.79	SD btwn Labs	5.19	SD btwn Labs	4.15
Labs Incld	61	58	57	58	SD btwn Wks	2.93	SD btwn Wks	3.95
Labs Excld	0	1	0	0	Labs Incld	61	Labs Incld	59
Labs not Rcvd	0	2	4	3				

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
TC	TMI Monitor/Compression Tester, Model 17-37	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		

	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
29AQBL	80.1 H	76.8 H	87.0	86.7 H	82.7	0.56	6.2	5.0	83.0	0.61	6.0	11.0 H	12	LC
2DLUY3	69.8 X	69.2 X	68.7 X	69.1 X	69.2	-3.64 X	2.9	0.5 L	69.2	-3.75 X	2.9	0.5 L	4	XX
2M9RP8	85.1	81.9	82.1	83.1	83.0	0.68	2.9	1.5	82.9	0.59	2.7	1.6	12	LC
3486X9	79.5	79.0	79.6	77.8	79.0	-0.60	1.7	0.8	78.9	-0.67	1.9	1.4	12	LD
3CQBW2	86.5	88.4 *	87.3	86.1	87.1	1.94	2.8	1.0	87.1	1.92	2.8	1.0	4	LD
4AEV2E	77.7	78.5	78.0	78.6	78.2	-0.84	2.6	0.4 L	79.7	-0.43	2.8	1.5	12	LD
6Z2LN7	75.6	74.9 L	73.9 L	76.5 L	75.2	-1.76	2.0	1.1	74.6	-2.04 *	1.7	1.5	12	TD
74J3JV	81.0	79.5 L	80.2	80.7	80.4	-0.16	2.2	0.6	79.5	-0.49	2.3	1.5	12	EM
7LG3TG	64.9 X	66.9 XH	63.0 XH	63.4 X	64.5	-5.11 X	5.6	1.8	69.7	-3.61 X	7.7	4.3	12	MB
7LLMJ6	83.8	84.5	83.7	84.3	84.1	1.00	2.7	0.4 L	83.7	0.86	2.7	1.3	8	LD
7PGEPG	83.9	81.8	89.5 *H	89.8 *	86.2	1.68	5.6	4.0	86.0	1.59	5.1	2.5	12	LX
7PJ4VY	81.5	80.3	81.2	82.9	81.5	0.19	2.6	1.1	80.9	-0.03	3.0	1.2	12	TH
7Y73M6	80.9	80.9	80.9	80.9	80.9	0.01	3.6	0.0 L	80.4	-0.20	3.0	0.4 L	12	LD
868XJA	85.4	84.4	80.4	80.5 H	82.7	0.57	5.0	2.6	82.5	0.46	4.9	4.4	12	LZ
9Q7LMB	82.1	81.5	81.9	84.7	82.5	0.52	2.1	1.5	82.3	0.42	2.5	1.1	12	LD
AABJLW	82.5	80.0 L	82.3	80.1	81.3	0.12	1.8	1.4	85.8	1.52	2.7	4.6	12	LZ
AGA7CC	81.6	81.9	82.8	83.0	82.3	0.46	2.8	0.7	82.4	0.43	2.4	2.0	12	EM
AMZJDY	78.2 H	84.5	87.7	85.2	83.9	0.94	4.4	4.0	83.8	0.87	4.2	3.5	8	MB
AVBH8B	83.2	79.3	85.2	83.4	82.7	0.59	3.1	2.5	83.0	0.64	3.4	3.2	12	LD
AVFY6A	77.3	76.4	77.1	79.1	77.5	-1.06	2.3	1.2	76.8	-1.33	2.0	1.1	12	LD
BFEMAA	84.7	82.9 L	76.4	83.2	81.8	0.29	2.3	3.7	82.4	0.43	2.4	2.9	10	LC
BRAWVX	78.1	79.0	78.9	80.4	79.1	-0.56	3.0	1.0	82.7	0.53	3.8	2.9	12	EM
BXGMX4	87.5	86.9	86.6	87.0	87.0	1.92	3.5	0.4 L	85.5	1.42	3.6	1.3	12	LD
C3NDZA	80.2	83.1	80.5	79.5	80.8	-0.01	2.9	1.6	81.7	0.21	2.5	1.7	12	LD
C9U7U7	77.0	77.2	76.6	79.1	77.5	-1.06	2.0	1.1	77.8	-1.03	2.2	1.4	12	LD
CLELX6	80.6 L	83.3	80.0	82.7	81.6	0.24	2.5	1.6	82.0	0.31	2.9	1.4	12	LD
CPGMX3	78.1	79.8	No Data	No Data	78.9	-0.61	4.4	1.2	80.1	-0.28	3.9	1.4	6	EX
ECNMK6	75.5	No Data	77.9	80.1	77.8	-0.96	2.0	2.3	77.0	-1.27	3.3	2.0	11	LZ
ERXQKP	82.9	82.9	82.3	80.6	82.2	0.40	2.5	1.1	81.4	0.11	2.4	1.2	8	LD
F48QT3	79.6 L	77.3	79.0	80.8	79.2	-0.53	2.2	1.4	82.0	0.31	2.6	2.7	12	LD
GD9DKZ	79.7 L	84.9	80.3	82.6	81.8	0.30	2.5	2.4	81.3	0.08	3.1	3.1	12	LC
GHHQ2Y	81.7	79.7 L	83.1	80.1	81.1	0.08	1.9	1.6	80.6	-0.12	2.0	1.8	8	LD
H44KTK	82.1	79.5	81.9	79.4	80.7	-0.05	3.7	1.5	80.7	-0.10	3.7	1.5	4	WK
HUEU7R	75.6	73.0 *	77.7	72.0 *	74.6	-1.96	2.5	2.6	76.8	-1.33	2.5	2.8	12	LC
HWGTGK	81.0	85.7	82.6 H	88.3	84.4	1.11	4.7	3.3	84.4	1.08	4.7	3.3	4	XX

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
JKK9DY	82.4	83.6	83.7	82.1	83.0	0.65	2.6	0.8	74.8	-1.98	3.6	6.2 H	12	LC
JQQ6WY	83.6	No Data	No Data	86.6	85.1	1.32	3.5	2.1	86.0	1.59	2.8	1.4	10	LC
JTYUM3	87.6	75.8	75.4 H	78.9	79.4	-0.46	4.8	5.7 H	78.2	-0.91	5.1	5.0	8	LC
KAGDUU	95.3 X	87.2	87.8 H	92.2 *	90.6	3.05 X	4.1	3.8	80.6	-0.13	3.9	7.9 H	12	LC
L4NT4J	87.2	87.5	80.4	86.2	85.3	1.38	2.5	3.3	84.8	1.21	2.8	3.9	12	LD
LGX9BN	78.1	80.0	79.3	79.4	79.2	-0.52	3.6	0.8	79.2	-0.57	3.6	0.8	4	LD
MZ6X2R	77.7 H	62.2 XH	88.0	78.2 H	76.6	-1.35	8.7	10.7 H	80.1	-0.31	6.5	10.1 H	12	LC
NEFYBM	82.5	83.5	87.4	86.3	84.9	1.27	2.9	2.3	85.1	1.28	3.1	2.1	12	TC
P76WPL	77.8	77.3	78.5	78.4	78.0	-0.90	3.5	0.6	75.5	-1.75	5.1	6.1 H	8	LD
PGGL3H	78.8	75.9	77.7	82.7	78.8	-0.66	3.1	2.9	81.8	0.24	3.2	4.7	12	LD
QF2LJT	80.4 H	75.3	78.7	75.7	77.5	-1.05	5.4	2.4	77.4	-1.16	4.7	2.0	8	LC
QMNC6M	75.7	74.7	73.9	72.7 *	74.3	-2.07 *	2.0	1.3	75.4	-1.77	2.2	1.4	12	EX
T7AM6R	81.8	81.4	81.3	83.9	82.1	0.38	2.7	1.2	81.8	0.26	3.2	2.3	12	LC
UCU6ZE	89.2 *	83.1	No Data	No Data	86.2	1.66	2.9	4.3	88.3	2.32 *	3.3	2.7	10	LZ
UMR7DJ	76.5 L	78.0	77.2	77.4	77.3	-1.12	2.3	0.6	78.2	-0.90	3.0	1.3	12	LD
VM8PXG	81.6	82.6	81.5	82.9	82.1	0.40	2.3	0.7	81.5	0.15	2.4	1.6	12	TH
VWXB4E	83.4	77.9	78.7	82.6	80.6	-0.07	3.9	2.8	81.1	0.03	3.6	2.0	8	EM
W3HQ8C	84.4	83.7	78.3	81.0	81.8	0.30	3.3	2.8	81.8	0.25	2.7	2.1	12	LC
WYKAUH	81.5	81.3	81.0	81.6	81.3	0.15	2.5	0.3 L	81.2	0.06	2.2	0.5 L	12	LZ
X2GCYA	75.6 L	74.6 H	No Data	73.6	74.6	-1.96	4.8	1.0	76.1	-1.58	4.5	2.4	7	LC
X3CV2B	81.4	82.9	80.7	80.1	81.3	0.12	3.2	1.2	78.8	-0.72	4.3	5.2	12	EM
X6GNTN	79.3	81.4	81.5	80.4	80.7	-0.07	2.6	1.0	80.0	-0.34	3.3	2.1	12	LC
YPMFBG	81.6	80.3	80.5 H	79.1	80.4	-0.16	3.8	1.0	79.7	-0.43	3.4	1.6	12	LC
YTKWMB	82.8	72.5 *	75.5	78.1	77.2	-1.14	3.5	4.4	70.3	-3.39 X	3.4	6.5 H	12	MB
ZFRYYH	86.8	83.7	86.6	88.9	86.5	1.76	2.7	2.1	84.2	1.01	2.8	2.6	12	LZ
ZUCE3G	76.5	77.3	76.8	76.4 L	76.7	-1.29	2.8	0.4 L	78.1	-0.93	3.0	1.3	12	EN

Consensus (All Labs) Results

Wk Mean	81.10	80.55	81.00	81.48
Avg SDr	3.63	3.27	3.25	3.29
SD btwn Labs	3.41	3.74	3.78	4.07
Labs Incld	58	56	55	57
Labs Excld	3	3	2	2
Labs not Rcvd	0	2	4	2

Month Mean	80.87
Avg SDr	3.42
SD btwn Labs	3.20
SD btwn Wks	2.60
Labs Incld	58

Grand Mean	81.02
Avg SDr	3.43
SD btwn Labs	3.15
SD btwn Wks	3.41
Labs Incld	58

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
TC	TMI Monitor/Compression Tester, Model 17-37	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		

	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
29AQBL	20.9 L	21.2 L	20.0 L	20.8 L	20.7	-1.21	0.0	0.5	21.4	-0.90	0.5	0.9	15	LW
2M9RP8	21.8	21.7	21.2	21.2	21.5	-0.73	2.0	0.3	21.3	-0.93	2.0	1.4	12	LU
3486X9	20.1	20.9	20.7	20.7	20.6	-1.30	1.7	0.3	20.8	-1.37	1.9	0.5	16	LW
3CQBW2	24.7	24.3	23.5	24.0	24.1	1.03	2.2	0.5	23.7	1.04	2.2	0.8	8	LA
4AEV2E	21.6	21.9	21.2	21.7	21.6	-0.65	1.9	0.3	21.7	-0.65	1.9	0.7	16	LU
74J3JV	25.3	25.0	23.8	22.3	24.1	1.02	2.9	1.4	23.2	0.61	2.0	1.1	16	LZ
7LG3TG	25.5 L	25.7 *L	25.4 *L	24.9 *L	25.4	1.86	0.3	0.4	25.1	2.20 *	0.4	0.9	12	BK
7LJTZY	22.5	22.2	22.3	22.3	22.3	-0.16	0.9	0.1 L	22.4	-0.01	0.9	0.2 L	16	TT
7PJ4VY	21.9	22.4	21.9	21.8 L	22.0	-0.36	0.8	0.3	22.0	-0.35	1.0	0.2 L	16	TT
868XJA	21.4 L	21.4 L	22.0 L	21.4 L	21.5	-0.70	0.4	0.3	21.5	-0.75	0.4	0.7	12	LA
9Q7LMB	25.3	24.8	23.8	24.1	24.5	1.29	2.0	0.7	24.0	1.30	2.0	0.7	16	LY
AMZJDY	22.3 L	22.3 L	23.4 L	22.8 L	22.7	0.09	0.1	0.5	22.3	-0.10	0.1	0.8	12	LA
AVBH8B	24.7 L	36.5 X	20.9 L	24.0 L	26.5	2.63 *	2.2	6.8 H	23.9	1.23	1.6	4.1 H	12	LA
BFEMAA	22.0	22.2	20.8	20.8	21.4	-0.75	1.9	0.8	21.8	-0.53	1.8	0.7	16	LW
BXGMX4	22.6	23.6	24.3	23.6	23.5	0.65	1.9	0.7	23.5	0.85	1.9	1.1	16	XX
C3NDZA	20.4	21.3 L	21.6	20.9	21.0	-1.01	1.3	0.5	21.3	-0.97	1.4	0.5	16	BK
CLELX6	22.2	21.8	22.0	21.7	21.9	-0.44	1.1	0.2	22.1	-0.29	1.7	0.6	16	LA
ECNMK6	21.5	21.9	21.2	21.3	21.5	-0.73	1.5	0.3	21.6	-0.70	1.7	0.7	15	LZ
ERXQKP	21.5	21.3	20.9	21.7	21.3	-0.81	1.9	0.3	21.4	-0.89	1.8	0.3	12	LY
F48QT3	23.3	23.2	23.5	21.4	22.9	0.21	2.7	1.0	22.4	-0.05	2.0	2.6 H	16	LA
FTAPFY	24.3	25.0	23.5	23.6	24.1	1.02	1.7	0.7	23.6	0.93	1.5	0.8	16	XX
GD9DKZ	24.3	24.3 L	24.2	No Data	24.2	1.12	0.8	0.1 L	23.2	0.67	0.9	1.0	12	LY
GHHQ2Y	21.8	21.3	21.0	21.0	21.3	-0.85	1.6	0.4	21.5	-0.82	1.6	0.5	16	LW
H44KTK	24.3	24.2	23.9	23.8	24.1	0.99	1.3	0.3	23.1	0.56	1.4	1.0	12	LU
HA8PGX	21.1	22.1	21.4	21.5	21.5	-0.70	1.5	0.4	21.1	-1.15	1.5	0.6	16	LW
HWGTGK	24.8 L	25.0 L	23.0 L	23.4 L	24.0	0.98	0.1	1.0	24.0	1.34	0.1	1.0	4	XX
JKK9DY	22.3	22.7	23.4	22.9	22.8	0.17	2.0	0.5	22.8	0.32	2.0	0.6	16	LW
JQQ6WY	25.8 L	No Data	No Data	26.2 XL	26.0	2.29 *	0.0	0.2	24.1	1.40	0.0	1.7 H	14	LA
JTYUM3	19.7	21.9	21.5	22.7	21.4	-0.74	1.6	1.3	20.6	-1.53	1.6	1.1	12	XX
K7H3YU	23.6	24.7	23.7	22.1	23.5	0.65	1.6	1.1	23.4	0.82	1.8	0.9	16	LU
KAGDUU	25.4	24.6	24.0	23.7	24.4	1.25	1.3	0.7	23.6	0.98	1.7	1.0	16	LU
L4NT4J	22.6	22.5	21.4	23.2	22.4	-0.09	2.0	0.8	22.6	0.17	1.8	0.8	13	LZ
LGX9BN	21.1 L	20.9 L	19.7 L	20.7 L	20.6	-1.29	0.0	0.6	20.7	-1.48	0.0	0.7	8	LU
MFXTBW	24.3	23.5	23.8	23.0	23.7	0.74	2.1	0.5	23.2	0.63	1.9	0.8	16	LU
NEFYBM	23.3	23.2 L	21.2 L	22.4 L	22.5	-0.04	0.5	1.0	23.1	0.57	0.5	1.0	16	LA

	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
P76WPL	21.0	20.9	21.9	21.7	21.4	-0.80	1.6	0.5	21.5	-0.77	1.9	0.8	15	LY
PFA44L	20.5 L	20.9 L	21.1 L	20.2 L	20.7	-1.25	0.3	0.4	20.8	-1.37	0.4	0.8	16	LA
PZEMEN	24.4	21.6	24.7	22.5	23.3	0.49	2.0	1.5	23.1	0.56	2.0	1.3	16	LA
QF2LJT	22.9	22.5	23.3	23.0	22.9	0.24	2.2	0.3	23.4	0.79	1.9	0.9	15	LW
QTQLAV	21.1 L	20.8 L	20.8 L	21.5 L	21.1	-1.00	0.0	0.4	21.3	-0.97	0.6	0.6	16	LW
T7AM6R	21.4	21.6	21.0	21.4	21.4	-0.80	1.5	0.3	21.4	-0.91	1.7	0.4	16	LA
TJXPNK	23.6	23.2	23.6	24.6	23.8	0.79	2.3	0.6	34.9	10.45 X	1.2	11.6 H	16	LU
UMR7DJ	21.7	22.1	21.5	21.5	21.7	-0.56	1.9	0.3	21.6	-0.74	1.8	0.5	16	LY
W3HQ8C	21.3	21.6	20.6	20.5	21.0	-1.05	1.8	0.5	21.7	-0.59	1.8	0.6	16	LU
X6GNTN	22.7	23.1	23.1	22.6	22.9	0.22	1.8	0.3	23.0	0.46	1.7	0.4	16	LU
XCYURG	23.7	22.7	23.3	22.0	22.9	0.25	1.5	0.7	23.4	0.81	1.9	1.2	16	LZ
Y39VDF	22.9	No Data	23.5	23.6	23.4	0.55	2.1	0.4	24.1	1.40	2.4	0.8	14	LW
Y9VH9L	24.8	25.4	24.6	23.9	24.7	1.40	2.0	0.6	25.0	2.16 *	2.0	0.8	16	LA
YPMFBG	22.0 L	21.0 L	21.8 L	22.2 L	21.8	-0.53	0.3	0.5	22.0	-0.34	0.4	0.8	16	LA
YXGNV8	21.0	21.9	22.6	19.7	21.3	-0.84	1.9	1.3	27.3	4.09 X	2.2	9.9 H	14	LY
ZFRYYH	20.6	21.8	21.3	21.8	21.4	-0.80	1.8	0.5	20.8	-1.33	1.9	0.9	16	LW
ZUCE3G	20.7	20.1	20.1	19.0 *	20.0	-1.73	1.9	0.7	20.9	-1.29	1.9	0.8	16	LY

Consensus (All Labs) Results

Wk Mean	22.62	22.57	22.33	22.18	Month Mean	22.56	Grand Mean	22.44
Avg SDr	1.63	1.64	1.55	1.64	Avg SDr	1.64	Avg SDr	1.60
SD btwn Labs	1.64	1.44	1.42	1.30	SD btwn Labs	1.50	SD btwn Labs	1.20
Labs Incld	52	49	51	50	SD btwn Wks	1.14	SD btwn Wks	1.07
Labs Excld	0	1	0	1	Labs Incld	52	Labs Incld	50
Labs not Rcvd	0	2	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

	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
29AQBL	20.9 L	21.1 L	21.6 L	19.8 L	20.8	-0.91	0.0	0.8	21.1	-0.67	0.6	0.8	11	LW
2M9RP8	21.8	21.1	21.2	20.6	21.2	-0.57	1.0	0.5	20.7	-1.07	1.4	0.5	12	LU
3486X9	20.0	20.1	20.2	20.2	20.1	-1.62	1.3	0.1	20.3	-1.52	1.3	0.3	12	LW
3CQBW2	21.7	22.3	21.8	21.6	21.8	0.11	1.1	0.3	21.8	0.19	1.1	0.3	4	LA
4AEV2E	21.4	21.1	21.4	21.1	21.2	-0.49	1.1	0.2	21.2	-0.52	1.1	0.4	12	LU
74J3JV	21.2	22.1	21.4	21.5	21.6	-0.18	1.1	0.4	22.1	0.49	1.2	0.6	12	LZ
7LG3TG	23.1 L	22.6 L	23.0 L	22.5 L	22.8	1.11	0.1	0.3	23.0	1.49	0.3	0.9	12	BK
7LJTZY	22.0	21.7	21.7	21.8	21.8	0.05	0.7	0.1	21.9	0.22	0.8	0.3	12	TT
7PJ4VY	21.3	21.5	21.9	21.7	21.6	-0.13	0.8	0.3	21.5	-0.17	0.8	0.2	12	TT
868XJA	21.2 L	21.1 L	21.4 L	21.8 L	21.4	-0.37	0.3	0.3	26.0	4.85 X	1.5	18.4 H	12	LA
9Q7LMB	24.0	23.7	22.9	22.8	23.3	1.65	1.4	0.6	23.3	1.82	1.3	0.4	12	LY
AMZJDY	20.0 L	21.1 L	21.7 L	21.7 L	21.1	-0.61	0.1	0.8	21.1	-0.59	0.1	0.7	8	LA
AVBH8B	20.7 L	22.5	20.6 L	21.3 L	21.3	-0.46	0.8	0.9	21.2	-0.50	0.5	0.6	12	LA
BFEMAA	21.3	20.9	20.6	21.4	21.1	-0.68	1.2	0.4	21.2	-0.46	1.3	0.3	10	LW
BXGMX4	22.7	22.2	22.7	22.4	22.5	0.81	1.4	0.2	22.6	1.05	1.5	0.2	12	XX
C3NDZA	20.6	21.1	20.4	20.9	20.8	-0.98	1.2	0.3	20.8	-0.90	1.2	0.5	12	BK
CLELX6	21.3	22.0	21.5	21.8	21.6	-0.08	1.2	0.3	21.5	-0.12	1.2	0.5	12	LA
ECNMK6	21.6	22.2	20.9	20.8	21.4	-0.34	1.0	0.6	21.2	-0.51	1.0	0.7	12	LZ
ERXQKP	20.7	21.1	20.4	21.2	20.9	-0.88	1.2	0.3	20.9	-0.79	1.3	0.3	8	LY
F48QT3	21.9	22.9	23.1	21.6	22.4	0.67	0.9	0.8	22.4	0.78	1.1	0.6	12	LA
FTAPFY	22.5	22.5	22.7	22.6	22.6	0.84	1.2	0.1 L	22.2	0.59	1.1	0.3	12	XX
GD9DKZ	22.5	24.2 *	22.9	24.0 *	23.4	1.69	0.8	0.8	22.1	0.49	0.7	1.3 H	12	LY
GHHQ2Y	20.8	20.5	20.8	21.9	21.0	-0.76	1.0	0.6	21.0	-0.69	1.1	0.4	8	LW
H44KTK	23.3	23.2	23.0	23.2	23.2	1.49	0.8	0.1	23.2	1.70	0.8	0.1	4	LU
HA8PGX	21.5	21.6	20.7	21.4	21.3	-0.43	1.1	0.4	21.1	-0.57	1.2	0.4	8	LW
HWGTGK	23.0 L	22.7 L	22.9 L	23.3 L	23.0	1.27	0.1	0.3	23.0	1.46	0.1	0.3	4	XX
JKK9DY	22.2	22.0	22.5	21.6	22.1	0.35	1.5	0.4	22.0	0.33	1.4	0.4	12	LW
JQQ6WY	24.9 *L	No Data	No Data	23.5 L	24.2	2.50 *	0.0	1.0	22.0	0.42	0.0	1.7 H	10	LA
JTYUM3	19.8	21.0	21.0	21.5	20.8	-0.93	1.0	0.7	20.3	-1.56	1.0	0.8	8	XX
K7H3YU	20.7	21.9	22.7	21.9	21.8	0.09	1.0	0.8	21.8	0.17	1.0	0.6	12	LU
KAGDUU	22.7	22.4	22.6	22.0	22.4	0.71	1.0	0.3	22.1	0.48	0.8	0.4	12	LU
L4NT4J	24.0	23.5	20.8	23.1	22.9	1.15	1.4	1.4 H	22.4	0.80	1.4	1.3 H	12	LZ
LGX9BN	19.9 L	20.5 L	19.4 L	21.0 L	20.2	-1.54	0.0	0.7	20.2	-1.61	0.0	0.7	4	LU
MFXTBW	23.5	22.8	22.6	21.8	22.7	0.98	1.5	0.7	22.6	1.03	1.5	0.7	12	LU
NEFYBM	21.8 L	21.6 L	22.1 L	21.3 L	21.7	-0.01	0.3	0.3	21.9	0.24	0.4	0.7	12	LA

Containerboard Interlaboratory Testing Program

Analysis 225

STFI, 36 lb Linerboard - 36Z3

TAPPI Provisional Test Method T826

Report #559 (D)
April 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
P76WPL	20.8	20.2	20.8	20.6	20.6	-1.15	1.2	0.3	21.1	-0.67	1.3	0.4	12	LY
PFA44L	20.3 L	20.6 L	21.2 L	20.7 L	20.7	-1.07	0.2	0.4	20.5	-1.27	0.2	0.4	12	LA
PZEMEN	23.8	20.9	22.7	21.1	22.1	0.40	1.8	1.4 H	22.4	0.78	1.6	0.8	12	LA
QF2LJT	22.9	23.2	23.2	21.9	22.8	1.08	1.2	0.6	23.0	1.50	1.3	0.7	12	LW
QTQLAV	21.4 L	21.1 L	20.4 L	20.7 L	20.9	-0.82	0.0	0.4	20.8	-0.99	0.4	0.6	12	LW
T7AM6R	20.5	20.6	20.7	20.3	20.5	-1.22	1.3	0.2	20.9	-0.85	1.0	0.7	12	LA
TJXPNK	21.1	22.8	22.6	23.0	22.4	0.65	1.2	0.9	26.0	4.79 X	0.7	6.0 H	12	LU
UMR7DJ	21.3	20.5	20.8	21.0	20.9	-0.84	1.1	0.3	21.4	-0.32	1.2	0.4	12	LY
W3HQ8C	21.9	20.9	20.0	21.1	21.0	-0.73	1.1	0.8	21.2	-0.48	1.1	0.5	12	LU
X6GNTN	21.6	21.7	22.0	21.8	21.8	0.05	1.2	0.2	21.9	0.28	1.2	0.3	12	LU
XCYURG	21.1	23.0	23.3	21.9	22.3	0.61	1.5	1.0	23.1	1.63	1.7	1.1 H	12	LZ
Y39VDF	23.5	No Data	23.3	23.0	23.2	1.55	1.3	0.2	22.9	1.40	1.5	0.7	11	LW
Y9VH9L	23.6	22.9	23.4	23.1	23.2	1.56	1.3	0.3	23.4	1.91	1.2	0.3	12	LA
YPMFBG	21.9 L	21.2 L	21.0 L	21.4 L	21.4	-0.37	0.2	0.4	21.3	-0.34	0.2	0.4	12	LA
YXGNV8	21.1	20.4	20.3	20.4	20.6	-1.20	1.3	0.4	20.5	-1.25	1.2	0.3	6	LY
ZFRYYH	21.1	22.4	21.2	22.1	21.7	-0.02	1.4	0.6	20.5	-1.24	1.3	1.1 H	12	LW
ZUCE3G	20.2	20.3	19.0 *	19.7 *	19.8	-1.98	1.4	0.6	20.3	-1.56	1.2	0.6	12	LY

Consensus (All Labs) Results

Wk Mean	21.74	21.75	21.62	21.66
Avg SDr	1.11	1.12	0.99	1.06
SD btwn Labs	1.21	1.01	1.11	0.96
Labs Incld	52	50	51	52
Labs Excld	0	0	0	0
Labs not Rcvd	0	2	1	0

Month Mean	21.72
Avg SDr	1.07
SD btwn Labs	0.98
SD btwn Wks	0.59
Labs Incld	52

Grand Mean	21.65
Avg SDr	1.10
SD btwn Labs	0.90
SD btwn Wks	0.65
Labs Incld	50

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

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
29AQBL	139.8	0.67	13.0	137.8	0.23	12.7	4	EV
3CQBW2	118.0	-0.79	10.2	121.9	-0.66	10.3	2	XX
4AEV2E	137.7	0.52	10.4	139.7	0.33	11.1	4	EV
7LG3TG	129.0	-0.05	17.0	140.1	0.35	14.9	3	EV
7LLMJ6	105.5	-1.62	11.2	112.5	-1.19	11.7	3	EV
868XJA	130.8	0.07	9.9	137.8	0.23	17.0	3	EV
8CP887	130.6	0.05	18.3	130.0	-0.21	15.6	4	EV
AMZJDY	128.5	-0.09	18.9	135.6	0.10	20.2	2	LA
AVBH8B	141.2	0.76	20.4	140.5	0.38	16.3	3	LA
GD9DKZ	92.2	-2.51 *	9.2	92.5	-2.31 *	9.9	3	EV
GHHQ2Y	128.2	-0.11	10.4	134.6	0.05	11.3	4	EV
HWGTGK	129.9	0.01	16.1	129.9	-0.21	16.1	1	EV
JKK9DY	136.0	0.41	6.6	133.2	-0.03	9.9	4	EV
JQQ6WY	125.7	-0.27	17.6	123.4	-0.58	14.7	4	LA
K7H3YU	145.2	1.03	13.0	145.3	0.65	13.4	3	EV
KAGDUU	111.0	-1.25	11.2	110.4	-1.31	11.3	4	LA
L4NT4J	145.8	1.07	15.7	148.6	0.83	13.4	4	LA
P76WPL	131.3	0.10	9.9	148.5	0.82	12.2	4	EV
PFA44L	116.7	-0.88	9.6	113.3	-1.14	9.5	4	EV
PZEMEN	112.4	-1.16	17.3	116.1	-0.99	14.3	4	LA
XCYURG	132.5	0.18	12.7	180.2	2.60 *	84.0	4	LA
YPMFBG	159.9	2.01 *	23.2	153.3	1.09	24.1	4	LA
ZFRYYH	138.6	0.59	15.7	131.5	-0.13	13.4	4	EV
ZUCE3G	148.7	1.26	8.3	153.1	1.08	11.9	4	EV

Consensus (All Labs) Results

Month Mean	129.80	Grand Mean	133.73
Avg SDr	14.23	Avg SDr	22.03
SD btwn Labs	14.99	SD btwn Labs	17.89
Labs Incld	24	Labs Incld	24

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		

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
CLELX6	377.1	1.18	7.6	383.9	1.91	9.7	4	XX
F48QT3	364.4	-0.52	4.5	362.3	-0.67	6.9	2	XX
LZPEGU	368.8	0.08	11.2	364.1	-0.45	9.6	2	XX
NEFYBM	355.6	-1.69	8.5	362.1	-0.70	7.9	4	XX
UCU6ZE	372.8	0.61	7.8	370.2	0.27	6.7	4	XX
W3HQ8C	370.7	0.33	9.4	365.0	-0.35	8.4	4	XX

Consensus (All Labs) Results

Month Mean	368.23	Grand Mean	367.92
Avg SDr	8.43	Avg SDr	8.29
SD btwn Labs	7.49	SD btwn Labs	8.34
Labs Incld	6	Labs Incld	6

Key to Instrument Codes Reported by Participants

XX Instrument make/model not specified by lab

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
29AQBL	202.0	1.61	24.9	223.3	2.45 *	23.3	4	SC
2M9RP8	161.0	-0.22	4.1	158.1	-0.41	8.0	3	XX
3486X9	161.2	-0.21	7.5	169.8	0.10	7.8	4	TM
4AEV2E	152.0	-0.62	8.2	148.8	-0.82	6.6	4	TM
7LLMJ6	168.0	0.10	3.7	167.1	-0.01	3.5	3	HY
868XJA	161.0	-0.22	2.5	164.0	-0.15	4.3	3	TM
AVFY6A	171.7	0.26	4.1	175.0	0.33	6.0	4	SC
CLELX6	80.0	-3.83 X	1.5	80.4	-3.82 X	2.1	4	LZ
GHHQ2Y	206.0	1.79	6.3	201.6	1.49	11.2	4	HY
JTYUM3	129.0	-1.64	3.8	135.0	-1.42	6.5	3	SC
K7H3YU	138.0	-1.24	8.2	139.4	-1.23	9.4	4	TM
KAGDUU	135.8	-1.34	4.2	142.4	-1.10	7.8	4	TM
LGX9BN	168.2	0.10	11.6	168.2	0.03	11.6	1	HZ
NEFYBM	151.2	-0.65	7.2	151.4	-0.71	6.4	4	SC
P76WPL	172.0	0.27	17.2	177.7	0.45	17.2	3	XX
T7AM6R	208.0	1.88	18.4	202.4	1.53	11.9	4	HY
TBJ4EF	165.6	-0.01	2.9	161.5	-0.26	5.2	4	TM
W3HQ8C	184.2	0.82	6.1	182.6	0.66	4.6	4	HY
XCYURG	145.8	-0.89	12.4	152.6	-0.65	11.9	4	TM
YPMFBG	170.4	0.20	11.1	161.5	-0.26	26.6	4	HY

Consensus (All Labs) Results

Month Mean	165.85	Grand Mean	167.47
Avg SDr	10.45	Avg SDr	11.71
SD btwn Labs	22.42	SD btwn Labs	22.80
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	158.56	18.64	7.28	14
Modified Scott Bond Mechanics	183.73	22.50	17.89	3

Analysis Notes

2M9RP8 - Data appears to be off by a factor of 1000. Corrected 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	XX	Instrument make/model not specified by lab

	Monthly Results			Cumulative Results			
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months
29AQBL	25.2	-0.33	1.6	28.4	0.94	2.4	4
3486X9	24.0	-0.82	3.1	24.0	-1.44	2.4	4
3CQBW2	22.2	-1.55	1.3	24.4	-1.22	1.2	2
4AEV2E	26.6	0.25	1.7	28.5	1.00	2.3	4
74J3JV	26.0	0.00	1.9	25.8	-0.47	1.7	4
868XJA	29.6	1.48	3.6	28.3	0.93	3.4	3
8QAMB6	27.2	0.49	0.8	26.1	-0.28	2.2	4
CLELX6	25.2	-0.33	0.8	29.0	1.27	1.0	4
FTAPFY	22.7	-1.35	2.3	25.2	-0.76	1.6	4
GHHQ2Y	25.6	-0.16	1.5	24.7	-1.07	1.1	4
JKK9DY	23.6	-0.98	1.1	24.2	-1.35	1.5	4
K7H3YU	23.9	-0.86	2.9	26.5	-0.07	2.2	4
KAGDUU	29.4	1.40	3.5	27.1	0.27	2.1	4
MZ6X2R	25.8	-0.08	1.3	27.5	0.46	2.1	3
NEFYBM	28.8	1.15	1.6	29.5	1.54	1.2	4
P76WPL	29.8	1.56	2.6	34.6	4.35 X	3.1	3
QF2LJT	26.2	0.08	1.3	28.5	1.00	3.1	4
W3HQ8C	22.6	-1.39	2.1	24.4	-1.24	1.5	4
XCYURG	29.0	1.23	3.6	28.6	1.08	3.2	4
YPMFBG	28.3	0.95	2.5	27.2	0.30	1.8	4
ZUCE3G	24.1	-0.76	0.8	25.0	-0.89	1.4	4

Consensus (All Labs) Results

Month Mean	25.99	Grand Mean	26.62
Avg SDr	2.19	Avg SDr	2.10
SD btwn Labs	2.44	SD btwn Labs	1.84
Labs Incld	21	Labs Incld	20

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
29AQBL	51.9	0.24	3.5	50.6	-0.28	2.4	4	HG
3486X9	50.9	-0.11	3.6	50.0	-0.50	3.3	4	HG
3CQBW2	50.9	-0.10	1.6	51.5	0.09	1.6	2	LA
7LG3TG	53.2	0.66	2.2	54.3	1.25	2.4	3	XX
868XJA	52.1	0.30	2.1	51.6	0.13	1.9	3	LP
8QAMB6	57.8	2.20 *	2.5	54.2	1.23	2.9	4	GA
AVBH8B	50.2	-0.34	2.0	51.3	0.03	1.7	3	LA
AVFY6A	51.3	0.05	1.5	51.8	0.23	1.9	4	LP
CLELX6	52.8	0.54	1.6	53.3	0.86	1.8	4	LA
ERXQKP	49.6	-0.53	1.4	50.1	-0.45	1.1	3	LP
FTAPFY	39.8	-3.79 X	1.9	41.3	-4.07 X	2.0	4	LA
GHHQ2Y	50.3	-0.31	2.1	52.0	0.31	1.7	4	LP
HWGTGK	2.6	-16.12 X	0.1	2.6	-19.91 X	0.1	1	LW
HYLK9X	52.2	0.34	1.8	53.0	0.71	2.1	4	XX
JQQ6WY	54.1	0.96	1.7	53.9	1.08	2.4	4	TL
K7H3YU	43.9	-2.41 *	2.1	45.5	-2.34 *	3.0	4	XX
KAGDUU	51.8	0.20	1.8	51.7	0.17	1.9	4	LA
P76WPL	53.5	0.75	2.6	52.5	0.50	2.7	4	LP
PGGL3H	44.4	-2.25 *	3.5	47.7	-1.44	3.6	4	GG
QF2LJT	53.5	0.75	1.9	53.0	0.72	1.9	4	LP
W3HQ8C	51.7	0.16	3.0	52.2	0.39	2.5	4	TP
WYKAUH	52.7	0.50	1.9	52.2	0.37	1.6	4	XX
XCYURG	48.1	-1.03	5.9	45.4	-2.38 *	4.4	4	XX
YPMFBG	49.5	-0.57	0.9	49.6	-0.69	1.6	4	LA

Consensus (All Labs) Results

Month Mean	51.19	Grand Mean	51.24
Avg SDr	2.55	Avg SDr	2.41
SD btwn Labs	3.01	SD btwn Labs	2.44
Labs Incld	22	Labs Incld	22

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
TL	Teledyne Gurley Densometer #4110, Oil Flotation	TP	Technidyne Profile/ plus Roughness & Porosity
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
29QZ22	61.4	58.2	60.5	62.2	60.6	0.46	1.5	1.8	60.4	0.43	2.0	1.4	16	MB
2M9RP8	61.4	61.1	65.4 *	65.9 *	63.4	1.85	1.8	2.6 H	61.3	0.87	2.0	2.2	12	LC
3CQBW2	59.4	58.8	58.9	57.8	58.7	-0.43	2.1	0.6	58.6	-0.53	2.4	0.8	16	LD
3PUWX6	58.8	59.2	59.0	59.9	59.2	-0.19	2.6	0.5	60.3	0.34	2.5	1.6	16	LZ
4AEV2E	56.9	58.5	56.8	56.4	57.2	-1.19	2.6	0.9	57.8	-0.94	2.7	1.5	16	LD
6Z2LN7	64.5 *	62.0 L	61.6 L	63.0	62.8	1.54	1.1	1.3	63.2	1.86	1.4	2.3	16	TD
74J3JV	57.1	59.0	58.7	59.8	58.6	-0.46	1.9	1.1	56.8	-1.43	2.6	2.6	16	LZ
7LG3TG	64.7 *	65.7 *	65.2 *	63.7	64.8	2.52 *	2.6	0.8	63.4	1.96	2.8	1.6	8	MB
7LJTZY	58.0	57.8	61.5	60.1 H	59.4	-0.12	3.9	1.7	60.5	0.43	4.0	1.8	16	TG
7PGEPG	56.5	56.1	55.9	56.3	56.2	-1.65	2.7	0.3	57.7	-0.97	2.4	1.3	16	LD
7PJ4VY	59.8	58.6	58.9	59.9	59.3	-0.15	2.4	0.7	58.7	-0.48	2.3	1.2	16	TH
7Y73M6	59.4 H	59.4	59.4	59.4	59.4	-0.10	3.7	0.0 L	59.4	-0.12	3.2	0.4	16	LD
8WXA6B	59.7	59.2	60.0	58.8	59.4	-0.09	2.5	0.5	58.7	-0.47	2.4	0.7	16	LD
9Q7LMB	56.8	55.5	57.0	56.4	56.4	-1.53	1.6	0.7	57.3	-1.18	1.7	1.2	16	LD
AABJLW	68.3 X	67.1 *	67.8 X	68.7 X	68.0	4.05 X	3.4	0.7	61.4	0.90	3.4	6.1 H	16	XX
AGA7CC	59.4	62.0	61.7	60.5	60.9	0.63	3.1	1.2	61.7	1.06	2.9	1.3	16	EM
AMZJDY	58.4	57.1	54.6 *	57.7	57.0	-1.28	3.0	1.7	57.2	-1.24	2.7	1.9	12	MB
BFEMAA	63.5 L	63.2	61.1	61.2 L	62.2	1.27	1.3	1.3	61.2	0.84	1.8	1.7	16	LC
BXGMX4	58.5	58.0	57.6	55.8	57.5	-1.03	3.2	1.2	58.0	-0.85	3.0	0.8	16	LD
CHFB36	61.8	62.0	63.0	61.3	62.0	1.18	2.4	0.7	61.8	1.13	2.3	0.6	16	LD
CLELX6	58.3	60.0	60.7	60.1	59.8	0.08	2.3	1.1	58.4	-0.61	2.6	2.0	16	LD
CPGMX3	63.8	61.1	No Data	No Data	62.5	1.38	2.1	1.9	60.0	0.18	2.2	2.0	8	LZ
DM9UJU	61.1	60.5 L	61.3	60.6	60.9	0.61	1.3	0.4	60.9	0.64	1.6	0.5	15	LC
DTVGEY	56.5	53.3 *	55.7	56.9	55.6	-1.94	2.0	1.6	47.2	-6.37 X	2.0	13.8 H	12	TX
ECNMK6	59.6	58.7	59.2	65.4 *	60.7	0.54	2.2	3.1 H	60.4	0.41	2.6	2.4	15	LZ
GHHQ2Y	60.4	60.0	57.7	58.7	59.2	-0.20	3.3	1.3	60.4	0.39	3.2	1.4	12	LD
H44KTK	59.5	60.4	60.0	59.7	59.9	0.14	1.8	0.4	59.2	-0.22	2.0	0.7	12	LC
H4GE7Y	58.6	59.4	58.2	59.2	58.9	-0.36	2.1	0.6	58.7	-0.46	2.2	0.5	16	LC
HUEU7R	58.7	59.7	58.9	60.3	59.4	-0.09	2.3	0.7	59.9	0.17	2.4	1.7	16	LC
HWGTGK	56.9	59.1	59.3	59.1 H	58.6	-0.48	3.6	1.1	58.6	-0.51	3.6	1.1	4	XX
HYLK9X	61.0	60.8	60.7	60.1	60.6	0.50	1.9	0.4	60.2	0.29	2.4	0.7	16	LD
JNLC6L	61.6	61.2	61.2	61.7	61.4	0.88	2.0	0.3	61.7	1.09	2.3	0.6	8	TM
JTYUM3	56.6	57.3	57.5	58.7	57.5	-1.00	2.6	0.9	56.9	-1.40	2.9	1.1	12	LC
K7H3YU	56.7	59.0	60.9	61.0	59.4	-0.10	3.0	2.0	58.2	-0.73	3.5	2.7	16	XX
KAGDUU	59.5 H	58.8	59.6	58.9	59.2	-0.20	3.6	0.4	58.8	-0.40	3.9	2.0	16	LC

Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM81

TAPPI Official Test Method T809

	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
L4NT4J	59.8	59.9	58.5	58.4	59.2	-0.20	1.9	0.8	58.9	-0.36	2.1	1.0	13	LD
LGX9BN	70.5 XH	65.9 *H	66.0 *	67.4 XH	67.5	3.80 X	5.0	2.1	63.8	2.12 *	4.5	4.7 H	8	LC
MAUNMJ	60.7	63.7	63.5	60.6	62.1	1.22	2.4	1.7	62.1	1.29	2.4	1.7	4	MB
P2A6GP	60.5	62.1 H	62.4 H	61.4	61.6	0.95	3.8	0.8	61.6	1.02	3.1	3.7 H	16	LC
P76WPL	58.9	58.7	59.5	58.7	58.9	-0.32	1.8	0.4	57.9	-0.89	2.4	0.9	16	LZ
QF2LJT	61.4	63.4	59.5	58.8	60.8	0.57	2.4	2.0	60.8	0.63	2.5	1.8	15	LC
QRJ73P	56.2	56.5	56.2	55.3	56.1	-1.72	2.7	0.5	57.4	-1.15	2.2	1.1	16	EM
T7AM6R	59.1	59.9 L	59.0	57.7	58.9	-0.33	1.3	0.9	58.7	-0.47	2.3	3.0	16	LC
V3ZJ8L	59.5 L	60.0	60.4	60.1	60.0	0.19	1.8	0.4	60.0	0.21	1.9	2.6	16	LD
W3HQ8C	63.0	62.7	60.4	61.8	62.0	1.15	2.9	1.1	61.2	0.80	3.1	1.4	16	LC
X6GNTN	58.0	58.5	59.3	59.4	58.8	-0.39	2.1	0.7	61.1	0.78	2.1	2.5	16	LD
Y39VDF	53.2 *H	No Data	52.5 X	53.6 *H	53.1	-3.15 X	4.0	0.6	54.8	-2.45 *	4.0	1.8	13	LC
Y9VH9L	54.7	55.1	57.5	56.6	56.0	-1.76	1.7	1.3	56.1	-1.82	2.4	1.0	16	LD
YTKWMB	58.9	61.2	59.1	56.0	58.8	-0.39	3.5	2.1	59.2	-0.20	4.2	2.0	12	MB

Consensus (All Labs) Results

Wk Mean	59.33	59.90	59.76	59.46	Month Mean	59.60	Grand Mean	59.61
Avg SDr	2.58	2.61	2.41	2.63	Avg SDr	2.50	Avg SDr	2.73
SD btwn Labs	2.43	2.71	2.44	2.49	SD btwn Labs	2.07	SD btwn Labs	1.95
Labs Incld	47	48	46	46	SD btwn Wks	1.24	SD btwn Wks	2.01
Labs Excld	2	0	2	2	Labs Incld	46	Labs Incld	48
Labs not Rcvd	0	1	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	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Compression Tester, Model 17-10	TH	TMI Compression Tester, Model 17-76
TM	TMI/Hinde & Dauch	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	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
3CQBW2	66.5	66.4	65.2	66.5	66.1	-0.09	1.9	0.6	65.8	-0.15	2.2	1.8	8	LD
3PUWX6	57.4 H	56.8 H	59.3 H	56.1 H	57.4	-1.85	6.2	1.4	57.6	-1.88	5.4	4.4 H	12	XX
6Z2LN7	69.9	72.4 L	72.2 L	74.5 L	72.3	1.15	1.2	1.9	71.5	1.06	1.2	1.4	16	TD
BFEMAA	63.8	62.5	66.0	65.6	64.5	-0.43	2.2	1.6	64.7	-0.37	2.3	1.4	16	LC
CHFB36	69.6	69.1	68.9	69.4	69.3	0.55	2.2	0.3	69.6	0.65	2.3	0.7	16	LD
CLELX6	69.7	66.9 L	70.8	69.0	69.1	0.51	1.8	1.6	69.3	0.60	2.1	1.4	16	LD
ECNMK6	71.0	72.2	67.7	66.8	69.4	0.58	3.1	2.6 H	69.2	0.57	3.2	2.9	15	LZ
HYLK9X	70.6 L	66.7	69.0	68.9	68.8	0.45	2.3	1.6	69.4	0.61	2.1	1.3	16	XX
QF2LJT	64.3	64.7	64.3	64.7	64.5	-0.41	2.2	0.2 L	64.3	-0.45	2.0	1.7	15	XX
V3ZJ8L	70.0	69.5	69.6	69.6	69.6	0.62	1.9	0.2 L	68.0	0.33	1.8	2.9	16	LD
W3HQ8C	72.6	73.1	70.8	72.6	72.3	1.15	2.1	1.0	71.8	1.13	2.0	1.4	16	LC
WYKAUH	68.1	68.3	67.9	69.6	68.5	0.39	1.8	0.8	68.9	0.52	1.5	1.8	16	XX
X6GNTN	64.4	63.1 L	64.8	64.9	64.3	-0.46	2.0	0.8	64.1	-0.49	1.8	1.6	16	LD
YTKWMB	56.9 *	56.1	55.6 *	54.7 *	55.8	-2.17 *	2.3	0.9	56.3	-2.14 *	2.0	1.0	12	MB

Consensus (All Labs) Results

Wk Mean	66.77	66.27	66.57	66.63	Month Mean	66.56	Grand Mean	66.47
Avg SDr	2.76	2.41	2.68	2.64	Avg SDr	2.63	Avg SDr	2.47
SD btwn Labs	4.89	5.29	4.60	5.51	SD btwn Labs	4.95	SD btwn Labs	4.72
Labs Incld	14	14	14	14	SD btwn Wks	1.30	SD btwn Wks	2.06
Labs Excld	0	0	0	0	Labs Incld	14	Labs Incld	14
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
TD	TMI Digital Crush Tester, Model 17-09	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - CM81

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
3CQBW2	41.6	42.1	42.2	41.1	41.7	0.92	1.9	0.5	40.7	0.89	2.1	1.0	16	LD
74J3JV	38.7	38.0 L	39.9	39.1	38.9	-0.02	2.0	0.8	38.0	-0.44	2.1	1.5	16	EM
7PGEPG	43.2	43.4	44.1	43.4	43.5	1.52	2.6	0.4	41.6	1.28	2.0	1.5	16	LZ
7Y73M6	38.5	38.6 H	38.6 H	38.5	38.5	-0.14	3.5	0.1 L	37.7	-0.56	2.9	0.5	16	LD
CHFB36	40.6	39.5	40.2	40.5	40.2	0.40	1.7	0.5	40.2	0.65	1.8	0.4	16	LD
CLELX6	38.5	37.6	37.9	38.6	38.1	-0.28	2.4	0.5	39.0	0.05	2.1	1.1	16	LD
CPGMX3	38.7	39.8	No Data	No Data	39.3	0.09	2.5	0.8	36.6	-1.12	1.9	2.8 H	8	EM
DM9UJU	42.3	41.9	42.2	41.0	41.9	0.96	1.5	0.6	40.4	0.73	1.5	2.9 H	15	LC
DTVGEY	27.1 *	26.7 *H	25.9 X	27.2 *L	26.7	-4.11 X	2.6	0.6	26.0	-6.21 X	3.6	1.6	12	TX
H44KTK	42.5	41.2	41.7	41.6	41.8	0.93	2.6	0.5	40.6	0.84	2.2	1.0	12	WK
HUEU7R	35.6	34.1	37.6	33.1	35.1	-1.30	1.4	1.9	35.6	-1.57	1.6	1.2	16	LC
HWGTGK	42.5	42.5	42.7	43.4	42.8	1.27	2.1	0.4	42.8	1.86	2.1	0.4	4	XX
HYLK9X	36.5	37.4	36.4	37.3	36.9	-0.70	2.1	0.5	37.2	-0.82	2.1	0.9	16	LD
JNLC6L	38.4	39.4	37.7	38.7	38.6	-0.14	2.2	0.7	37.2	-0.82	2.2	2.6 H	8	LD
L4NT4J	41.8	42.0	36.9	42.0	40.7	0.57	1.7	2.5 H	41.0	0.99	2.0	1.4	13	LD
LGX9BN	39.9	38.8	38.8	38.5	39.0	0.00	2.2	0.6	38.9	-0.02	2.2	0.9	8	LD
P2A6GP	28.5 *	27.9 *	28.2 X	28.7	28.3	-3.57 X	2.3	0.4	25.6	-6.41 X	2.3	3.7 H	16	XX
QF2LJT	36.2	33.8	36.0	32.4	34.6	-1.47	2.3	1.8	36.7	-1.07	2.6	2.1	12	LC
QRJ73P	42.0	42.2	41.6	41.9	41.9	0.99	2.2	0.3	40.1	0.58	1.7	1.6	16	LC
VM8PXG	40.5	41.6	40.6	40.5	40.8	0.61	2.1	0.5	40.7	0.86	2.1	1.3	16	TH
W3HQ8C	42.6	40.1	39.3	38.6	40.1	0.39	1.7	1.8	39.5	0.29	1.9	1.4	16	LC
XGCUN8	33.5	38.3	37.9	33.8	35.9	-1.04	2.3	2.6 H	36.8	-1.03	3.3	2.4	16	LZ
XXH24A	35.1	35.2	35.6 L	35.6	35.4	-1.21	1.3	0.2	35.6	-1.58	1.1	0.7	16	WK
YTKWMB	32.0	33.0	31.4 *	31.6 H	32.0	-2.33 *	2.4	0.7	30.4	-4.08 X	2.4	1.6	12	MB

Consensus (All Labs) Results

Wk Mean	38.20	38.13	39.00	37.69	Month Mean	38.98	Grand Mean	38.90
Avg SDr	2.15	2.39	2.24	1.98	Avg SDr	2.18	Avg SDr	2.12
SD btwn Labs	4.44	4.41	2.95	4.56	SD btwn Labs	2.98	SD btwn Labs	2.08
Labs Incld	24	24	21	23	SD btwn Wks	1.13	SD btwn Wks	1.59
Labs Excld	0	0	2	0	Labs Incld	22	Labs Incld	21
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	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TH	TMI Compression Tester, Model 17-76
TX	TMI Digital Crush Tester (model not specified)	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
3CQBW2	13.1	13.3	13.3	12.9	13.1	0.09	0.8	0.2 L	13.3	0.37	0.8	0.3	16	LA
3PUWX6	12.6	12.2	12.8	12.2	12.5	-0.73	0.8	0.3	12.4	-0.98	0.8	0.2	16	LW
4AEV2E	12.9	12.5	12.1	12.4	12.5	-0.72	0.7	0.3	12.4	-0.95	0.8	0.2	16	XX
74J3JV	13.7	13.0	13.2	12.5	13.1	0.05	0.8	0.5	12.9	-0.21	0.7	0.6	16	LZ
7LG3TG	14.7 *L	14.9 *L	15.0 *L	14.7 *L	14.8	2.16 *	0.1	0.1 L	14.1	1.68	0.1	0.5	12	BK
7PJ4VY	12.2	13.1	12.7	21.8 X	14.9	2.31 *	0.7	4.6 H	13.6	0.91	0.7	2.2 H	16	TT
8WXA6B	12.9	13.0	12.8	12.8	12.9	-0.25	0.8	0.1 L	12.8	-0.47	0.8	0.2	16	LB
AMZJDY	No Data	12.6 L	12.6 L	12.6 L	12.6	-0.62	0.0	0.0 L	12.3	-1.12	0.0	0.4	10	LA
CLELX6	12.7	13.9	13.0	13.1	13.2	0.13	0.7	0.5	12.7	-0.48	0.7	0.4	16	LA
DM9UJU	13.4	14.0	13.3	12.4	13.3	0.27	0.5	0.7	13.3	0.35	0.6	0.5	15	XX
DTVGEY	11.9 L	11.6 L	11.5 L	12.0 L	11.8	-1.61	0.0	0.3	15.3	3.49 X	0.0	5.3 H	16	TS
E2JUTP	11.7	12.1	11.6	11.0 *	11.6	-1.79	0.6	0.4	11.6	-2.25 *	0.6	0.4	4	LA
F48QT3	13.8	12.9	12.4	12.5	12.9	-0.21	0.7	0.6	13.8	1.15	0.8	2.3 H	16	LA
H44KTK	13.8	13.8	14.0	13.9	13.9	0.98	0.6	0.1 L	13.4	0.61	0.7	0.5	12	LU
H4GE7Y	12.8	12.8	12.9	12.9	12.9	-0.26	0.7	0.1 L	12.8	-0.46	0.7	0.1	16	LB
HWGTGK	13.9 L	13.8 L	14.3 L	12.6 L	13.7	0.74	0.0	0.7	13.7	0.94	0.0	0.7	4	XX
JNLC6L	12.8	13.3	13.3	13.9	13.3	0.31	0.7	0.4	13.7	1.05	0.9	0.6	8	LA
L4NT4J	14.3	14.3	12.1	13.8	13.6	0.69	0.9	1.0	13.6	0.88	0.8	0.7	13	LZ
P76WPL	12.3	12.6	12.3	12.1	12.3	-0.94	0.7	0.2	12.4	-0.96	0.7	0.3	16	LB
QRJ73P	12.7	12.7	13.0	13.1	12.9	-0.24	0.8	0.2	12.6	-0.68	0.7	0.4	16	LB
V3ZJ8L	13.3	13.1	13.0	12.8	13.0	-0.02	0.7	0.2	12.9	-0.24	0.7	0.3	16	LA
W3HQ8C	12.2	12.0	12.1	12.4	12.2	-1.10	0.7	0.2 L	12.4	-1.04	0.7	0.3	16	LU
XGCUN8	13.3	12.4	12.5	13.1	12.8	-0.31	0.9	0.4	13.4	0.49	0.8	0.7	16	LA
Y39VDF	14.1	No Data	13.9	13.8	13.9	1.07	0.7	0.2 L	14.0	1.41	0.9	0.3	14	LW

Consensus (All Labs) Results

Wk Mean	13.09	13.03	12.90	12.85	Month Mean	13.06	Grand Mean	13.05
Avg SDr	0.70	0.68	0.68	0.62	Avg SDr	0.67	Avg SDr	0.71
SD btwn Labs	0.79	0.81	0.82	0.78	SD btwn Labs	0.81	SD btwn Labs	0.64
Labs Incld	23	23	24	23	SD btwn Wks	1.02	SD btwn Wks	0.79
Labs Excld	0	0	0	1	Labs Incld	24	Labs Incld	23
Labs not Rcvd	1	1	0	0				

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		