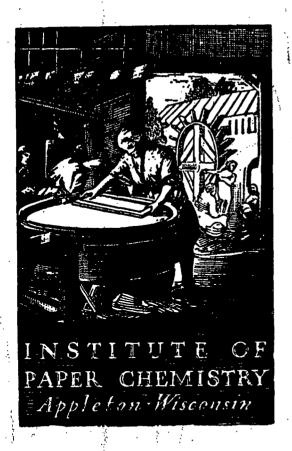
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CONTINUOUS BASELINE STUDY

Project 1108-13

Report 172

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

August 1, 1961

THE INSTITUTE OF PAPER CHEMISTRY Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

Report 172

A Progress Report

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FOURDRINIER KRAFT BOARD INSTITUTE, INC.

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THE INSTITUTE OF PAPER CHEMISTRY Appleton. Wisconsin

CONTINUOUS BASELINE STUDY

PRESENTATION AND DISCUSSION OF TEST RESULTS

During the month of July, eighty-nine sample lots of 42-1b. fourdrinier kraft linerboard representing the production of sixteen mills were evaluated at The Institute of Paper Chemistry. Each sample lot was evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The average strength results for each mill may be seen in Table I and are graphically presented in Fig. 1 to 5. In addition to a comparison of the current mill averages for the various tests. Table I also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. For each test, the current mill average represents the average obtained on all sample lots evaluated during the current period, the current F.K.I. average represents the average of the current mill averages, and the cumulative F.K.I. average represents the average of the current F.K.I. averages for the previous twelve months excluding the current period. The F.K.I. index expressed in per cent is the ratio of the current F.K.I. average to the cumulative F.K.I. average.

In Table II, a tabulation of the number of sample lots submitted by each mill is shown.

Supplementary to the basis weight data given in Table I, a tabulation is given in Table III of the amount by which the basis weight average for each mill varies from the 42-lb. specification set forth in Rule 41.

SUMMARY OF COMPOSITE MILL AVERAGES -- JULY 1 THROUGH JULY 31, 1961

Elmendorf Tear, g./sheet hine Cross Machine	904	338)) ; ;	* 50 C	720	406	355	904	345	358	36		382	-		378	604	383	365	396	373	373	100.0
Elmenc g•/ In Machine	368	324	ולאל פרנ	319 200	(0)	374	352	372	313	536	36		345			327	356	321	327	314	331	331	100.0
Bursting Strength, p.s.i. gage	109	001	,,,,,	114		100	113	104	174	2112	110		111			110	77.	116	211	TT	. 111	011	100.9
Caliper, points	12.0	13.0	, c	ない	7.51	12.7	12.4	72.6	0.21	13.6	12,2	tted.	13.1	tted.	tted	13.2	12.3	12.0	11.3	12.5	12.5	12.6	99.2
Basis Weight, lb.	43.1	y c77) ~ 1 C	†** C = = = = = = = = = = = = = = = = = =	(°21)	1. 1.	43.6	43.7	43.2	42.9	43.4	No samples submitted	43.8	No samples submitted		43.8	2.41	43.3	43.4	42.6	43.3	43.4	8.66
Mall	<₩	: pa	a (ب د	ו ב	ŒΊ	ĺt.	ტ	н	Н	J	У	ц	E	Z	0	Д	CV	တ	E-1	Current FKI Average:	Cumulative FKI Average:	FKI Index, %

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	7
B	6
C	8
D	10
E	1
F	2
G	6
H	6
I	5
J	8
K	0
L	7
M	0
N	0
O	5
P	6
Q	7
S	3
T	2
Total	89

TABLE III

PERCENTAGE DEVIATION FROM 42-LB, BASIS WEIGHT

SPECIFICATION

Mill Code	Per Cent
A B C D	+2,6 +1,4 +3.3 +1,2
E F G H	*5.0 +3.8 ÷4.0 +2.9
I J K L	+2.1 +3.3 +4.3
М О Р	÷4,3 ÷5,2
Q S T	+3.1 +3.3 +1.4

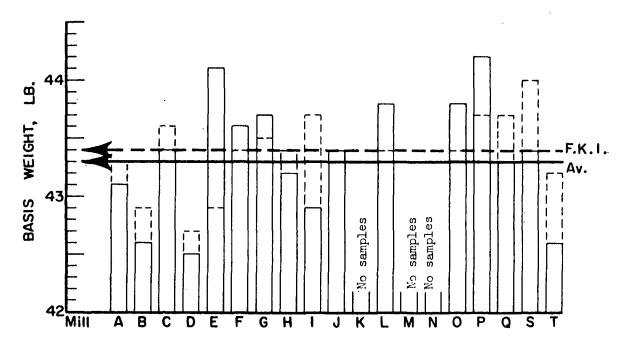


Figure 1. Comparison of Basis Weight Results for July, 1961

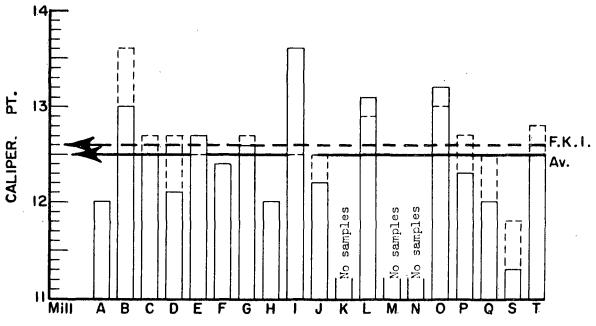


Figure 2. Comparison of Caliper Results for July, 1961

Current mill average
---- Cumulative mill average

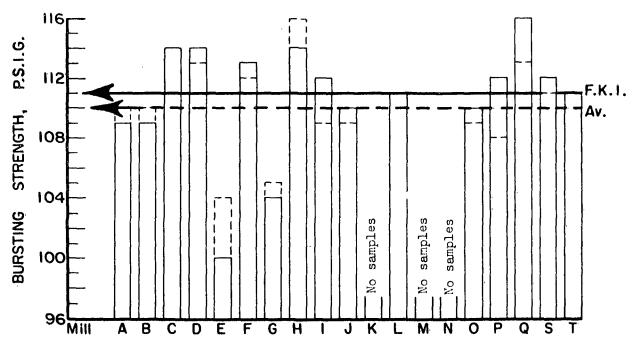


Figure 3. Comparison of Bursting Strength Results for July, 1961

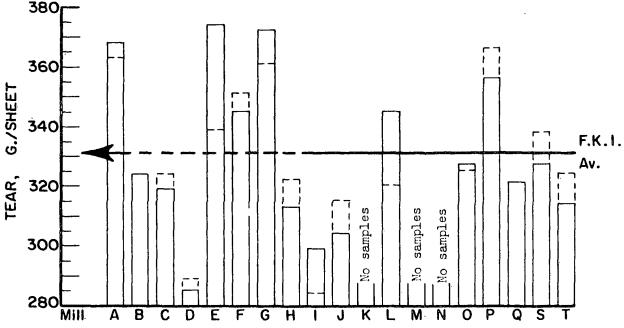


Figure 4. Comparison of Machine-Direction Tear Results for July, 1961

---- Current mill average

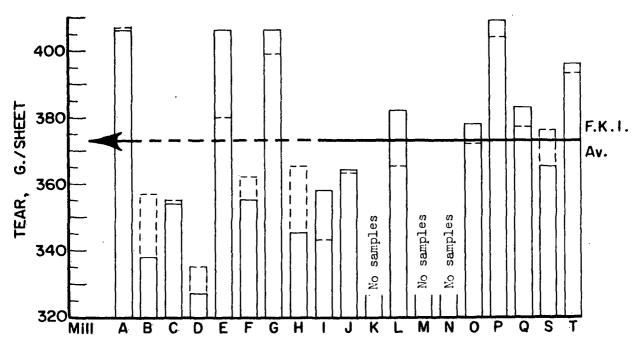


Figure 5. Comparison of Cross-Machine Direction Tear Results

for July, 1961

Current machine average

---- Cumulative machine average

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Shown below from Table I are the maximum and minimum current mill averages for each test and also the current and cumulative F.K.I. averages:

	Current M	ill Averages Min.	F.K.I. Av Current	erages Cumulative
Basis weight, 1b.	44.2	42. 5	43.3	43.4
Caliper, points	13.6 .	11.3	12.5	12.6
Bursting strength, p.s.i. gage	116	100	111	110
Machine direction Elmendorf tear, g./sheet	374	285	331	331
Cross-machine direction Elmendorf tear, g./sheet	409	327	373	373

The test results obtained at the Institute and at the mill are given alphabetically in Tables IV to XXII for each mill. Included in each of these tables are the maximum, minimum, and average test data obtained at the Institute on each sample lot of linerboard. The data obtained at the Institute include also for each test the calculation of (1) a current mill average that represents the average of the averages obtained on the individual sample lots of linerboard evaluated during the current period, (2) a cumulative mill average that represents the average of the current mill averages for the previous twelve months excluding the current period, (3) a mill factor expressed in per cent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in per cent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in per cent that represents the ratio of the current mill average to the cumulative F.K.I. average. As mentioned above, the results presented in Tables IV to XXII also include data obtained at the mills. The mill data

TABLE IV SUPPART OF INSTITUTE AND MILL DATA July, 1961

MILL A -- 42-IB. LINERBOARD

eet	Diff.	+27	ω +	+16	#	7	ţ	, 52	+29			
Elmendorf Tear, g./sheet Cross Machine	l l	420	1,4	411	455	7	433	694	435			•
dorf Tear, g./	Av.	393ª	403ª	395ª	411a	4004	450a	417 ^a	904	404	8.8	108.8
endorf Cro	Institute Max. Min. Av.	916 360	368	352	360	376	392	376		-		
Elm	Max.	416	456	416	745	8448	\$	\$				
reet	Diff.	+56	97-	- 2	. \	77	- 2	6 +	Ψ			
. g./si	M411	367	357	357	377	366	3,	395	371			
Elmendorf Tear, g./sheet In Machine	!4	景	3674	364a	372ª	387	355ª	388ª	368	363	101.4	111.2
endorf	Institute Max. Min. Av.	न्रू	ŧ	280	328	360	36	328				
E	Yar L	368	416	435	807	077	335	456				
	Mill Av. Diff.	7	ς,	7	₹.	7	ç	4	?			
Bursting Strength, p.s.1. gage		107	105	103	108	ដ	103	106	107			
ing St	Institute Max. Min. Av.	109	108	10	133	71	1 0	97	109	91	99.1	99.1
Burst1	Institute ix. Min. A	25	83	છ	83	95	83	89				
	Yax.	128	128	122	132	131	120	. 727				
	Diff.	-0.3	+°0-	-0.1	-0.2	-0.3	4.0-	-0.5.	-0.3			
	}											
Ints	MS11	11.8	11.5	11.7	7.7	11.5	11.8	17.71	11.7			
er, points	- *									12.0	0.00	95.2
Caliper, points	, Ar.	12.1	11.9	11.8	9.प	11.8	12.2	12.6	12.0 11.7	12.0	100.0	95.2
Caliper, points	, Ar.	12.1	11.9	11.8	9.11 0.11	11.11 11.8	11.8 12.2	11.8 12.6		12.0	100.0	95.2
Caliper, points	Institute Max. Min. Av.	12.7 11.5 12.1	12.3 п.3 п.9	12.11 11.2 11.8	12.1 ה.נו ניבו	12.2 11.1 11.8	13.0 11.8 12.2	13.2 11.8 12.6	27.0	12.0	100.0	95.2
	Diff. Max. Min. Av.	-0.2 12.7 11.5 12.1	0.0 12.3 11.9	9.11 2.11 1.21 0.1-	-0.7 12.1 11.0 11.6	-0.6 12.2 11.11 11.8	-0.3 13.0 11.8 12.2	-0.3 13.2 11.8 12.6	27.0	12.0	100.0	95.2
	Diff. Max. Min. Av.	42.2 -0.2 12.7 11.5 12.1	12.3 п.3 п.9	12.11 11.2 11.8	42.7 -0.7 12.1 11.0 11.6	42.5 -0.6 12.2 11.1 11.8	13.0 11.8 12.2	13.2 11.8 12.6	42.7 -0.4 12.0	12.0	100.0	95.2
	Av. Av. Diff. Max. Min. Av.	42.2 -0.2 12.7 11.5 12.1	42.7 0.0 12.3 11.3 11.9	42.8 -1.0 12.1 11.2 11.8	42.7 -0.7 12.1 11.0 11.6	42.5 -0.6 12.2 11.1 11.8	42.4 -0.3 13.0 11.8 12.2	43.5 -0.3 13.2 11.8 12.6	27.0	43.3	99.5	99.3 95.2
Basis Weight, 1b. Caliper, points	Av. Av. Diff. Max. Min. Av.	42.2 -0.2 12.7 11.5 12.1	42.7 0.0 12.3 11.3 11.9	42.8 -1.0 12.1 11.2 11.8	42.7 -0.7 12.1 11.0 11.6	42.5 -0.6 12.2 11.1 11.8	42.4 -0.3 13.0 11.8 12.2	43.5 -0.3 13.2 11.8 12.6	42.7 -0.4 12.0			
	Diff. Max. Min. Av.	-0.2 12.7 11.5 12.1	0.0 12.3 11.9	9.11 2.11 1.21 0.1-	-0.7 12.1 11.0 11.6	-0.6 12.2 11.11 11.8	-0.3 13.0 11.8 12.2	-0.3 13.2 11.8 12.6	42.7 -0.4 12.0			
	stitute Mill Institute Min. Av. Av. Diff. Max. Min. Av.	42.2 -0.2 12.7 11.5 12.1	42.7 0.0 12.3 11.3 11.9	42.8 -1.0 12.1 11.2 11.8	42.7 -0.7 12.1 11.0 11.6	42.5 -0.6 12.2 11.1 11.8	42.4 -0.3 13.0 11.8 12.2	43.5 -0.3 13.2 11.8 12.6	43.1 42.7 -0.4 12.0	43.3		
	Mch. Institute Mill Institute No. Max. Min. Av. Av. Diff. Max. Min. Av.	42.8 42.0 42.4 42.2 -0.2 12.7 11.5 12.1	42.7 0.0 12.3 11.3 11.9	42.8 -1.0 12.1 11.2 11.8	42.7 -0.7 12.1 11.0 11.6	42.5 -0.6 12.2 11.1 11.8	42.4 -0.3 13.0 11.8 12.2	43.5 -0.3 13.2 11.8 12.6	43.1 42.7 -0.4 12.0	43.3	5*66	99.3
	Mch. Institute Mill Institute Pinish No. Max. Min. Av. Av. Diff. Max. Min. Av.	W.B 42.8 42.0 42.4 42.2 -0.2 12.7 11.5 12.1	7.B 43.8 42.0 42.7 42.7 0.0 12.3 11.3 11.9	W.B 444,4 42,8 43,8 42,8 -1.0 12,1 11,2 11,8	W.B 44.0 42.0 43.4 42.7 -0.7 12.1 11.0 11.6	W.B 43.8 42.4 43.1 42.5 -0.6 12.2 11.1 11.8	W.B 43.4 42.0 42.7 42.4 -0.3 13.0 11.8 12.2	W.B 44.2 43.0 43.8 43.5 -0.3 13.2 11.8 12.6	43.1 42.7 -0.4 12.0	43.3	5*66	99.3
	Mch. Institute Mill Institute No. Max. Min. Av. Av. Diff. Max. Min. Av.	- 42.8 42.0 42.4 42.2 -0.2 12.7 11.5 12.1	- 43.8 42.0 42.7 42.7 0.0 12.3 11.3 11.9	- 44,4 42,8 43,8 42,8 -1.0 12,1 11,2 11,8	- 44.0 42.0 43.4 42.7 -0.7 12.1 11.0 11.6	- 43.8 42.4 43.1 42.5 -0.6 12.2 11.1 11.8	- 43.4 42.0 42.7 42.4 -0.3 13.0 11.8 12.2	- 44.2 43.0 43.8 43.5 -0.3 13.2 11.8 12.6	42.7 -0.4 12.0			

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE V

SUMMARY OF INSTITUTE AND MILL DATA July, 1961 MILL B -- 42-LB. LINERBOARD

										I'O	nrarı
eet	Mff.	+24	947	о ,	+39	+18	41	+30		٠	
g./sh hine	l	360	367	356	366	素	38	368			
Elmendorf Tear, g./sheet Cross Machine	Institute Max. Min. Av.	336ª	321 ^a	3472	357ª	326 ^a	341ª	338	357	₹:3	90.6
ndori	Institute x. Min. Av	240	288	320	ģ	268	320				
ЕЗпе	Max	432	360	392	424	376	376				
eet	Diff.	- 2	+17	-15	+17	9 +	9 +	+			
g./sb	a .	310	3,50	£0	311	330	336	328			
Elmendorf Tear, g./sheet	Institute x. Min. Av.	317a	323	355	294	3248	330ª	324	354	100.0	97.9
riopu	Min.	564	240	328	272	564	564				
Elme	Institut Max. Min.	3 <u>8</u>	38	435	320	368	蒸				
	Diff.	-10	6 +	‡	٠	+ +	- 2	+			
Bursting Strength,	Mill Av. Diff	106	112	114	711	ģ	105	977		_	_
ing St	Institute Mi Max. Min. Av. Av	911	103	103	411	163	211	109	210	99.1	1.66
Jurst	Institute x. Min. A	8	8	85	87	4	4				
	Max.	133	77	131	13	120	122				
	Diff.	-0.2	-0.2	-0.1	-0.1	+0.2	-0.2	-0.1			
ł	l_	12.8	8.21	13.0	13.6	12.8	12.6	12.9			
1	titute Mil	13.0	13.0	13.1	13.7	9.21	12.8	13.0	13.6	9.56	103.2
,		12.5	22.5	12.9	13.2	17.71	15.31				н
	Ins Max.	13.5	13.4	13.5	14.2	13.0	13,4				
	4	+0.6	+0.2	, † *C	5.3	+0.2	-0.1	0.0			
•	D. Piff.	142.44 +(45.4 -0.4	43.7 -0.3	. 45.0 +(43.0	42.6			
:	alt.		9 42.1	8 42	643				6	3	8
;	Basis Weight, 1b. titute Mill	42.6 40.8 41.8	42.2 40.8 41.9	43.8 42.0 42.8	2 44.0	42.8 41.0 41.8	44.0 42.0 43.1	42.6	42.9	99.3	98.2
	Basis Institute	40.	0+7	42.	43.	41.	42.				
	Max.	42.6	42.2	43.8	44.2 43.2	42.8	•.				
	Mch.	~	2	7	2	8	2	age:	verage		
	Finish	WF1S	WF1S	WFLS	WFLS	SF13	WFIS	ill Aver	e M111 A	or.	, #c
	Date Nade	6/25/61	19/1 /2	19/01/2	7/11/51	7/15/61	19/91/2	Current Mill Average:	Cumulative Mill Average:	Mill Factor. &	Mill Index, \$

 $^4\mathrm{This}$ average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VI SURMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL C -- 42-LB. LINERBOARD

د.	Diff.	-36	-20	77	-51	-17	-19	1 2-	-13		25			
/shee'		336												
Elmendorf Tear, g./sheet	trte Mill		а ж1	å 328	a 308	a 324	a 331	a 331	332		329		۲.	6.
orf Te	ute n. Av.	0 372ª	8 361ª	\$# o	3 359ª	0 341ª	+ 350ª	3 355ª) 345ª		3%	355	99.7	9.49
Imend	Institute	. 448 320	16 328	320	328	8 320	304	2 328	9 320					
μ.		3	914	004	400	368	392	392	376					
heet	Diff.	-57	-56	き	74	-17	-32	-15	-23		-35			
Elmendorf Tear, g./sheet	A A LT	288	300	23	172	569	271	312	285		284			
f Tear	in rachine rute Mi	345a	356ª	311ª	317ª	586	303ª	3274	308		319	324	98.5	7. 96
endor	Institute Max. Min. Av.	यूर	268	280	264	240	5 64	305	507					
ű	Max.	376	408	336	360	3%	蒸	360	328					
	Diee.	0	7	+5	,	φ	9	‡	‡		4			
Bursting Strength,	la ⋅	119	777	£	811	122	117	117	120		118			
sting Stren	4	119	Ħ	fi	113.	971	Ħ	113	977		114	176	100.0	103.6
Sursti	Institute Max. Min. Av.	10	8	8	\$	8	87	16	707					
	Aa Y	132	127	137	128	621	ż	131	129					
	انا		~			10			-4					
	1 4	~	0		3	0		9.7	3		5.3			
s S	TI DEF.	2.2 -0.4	2.6 -0.3	2.1 -0.1	2.0 -0.5	5.0 -0.5	2.1 -0.7	2.4 +0.2	1.0 +0.1		:.2 -0.3			
points	_	12.2	12.6	12.1	12.0	0.51	12.1	१ .टा	12.0		2.21	2	.	8
liper, points	AV. AV.	2.21 9.21	९.घ. ६.घ	12.2 12.1	०.घ ६.घ	12.5 12.0	12.8 12.1	12.2 12.4	11.9 12.0	•		12.7	4.86	2.66
Caliper, points	Min. Av. Av.	2.21 2.51 2.21	12.2 12.9 12.6	1.21 2.21 0.21	12.0 12.5 12.0	12.1 12.5 12.0	12.2 12.8 12.1	11.9 12.2 12.4	11.3 11.9 12.0		2.21	12.7	4.86	99.2
	AV. AV.	2.21 9.21	9.21 6.21	12.2 12.1	०.घ ६.घ	12.5 12.0	12.8 12.1	12.2 12.4	11.9 12.0		2.21	12.7	4,.86	99.2
	Min. Av. Av.	2.21 2.51 2.21	12.2 12.9 12.6	1.21 2.21 0.21	12.0 12.5 12.0	12.1 12.5 12.0	12.2 12.8 12.1	11.9 12.2 12.4	11.3 11.9 12.0		2.21	12.7	4.86	89.2
	Diff. Max. Min. Av. Av.	13.0 12.2 12.6	13.5 12.2 12.9 12.6	42.0 -0.6 12.6 12.0 12.2 12.1	12.9 12.0 12.5 12.0	०.घ २.घ १.घ ०.६१	13.2 12.2 12.8 12.1	12.8 11.9 12.2 12.4	0.21 9.11 6.11 2.21		12.5 12.2	7.21	4°86	2*66
	Av. Av. Diff. Max. Min. Av. Av.	43.3 -0.9 13.0 12.2 12.6 12.2	43.3 -0.3 13.5 12.2 12.9 12.6	42.0 -0.6 12.6 12.0 12.2 12.1	41.8 -0.8 12.9 12.0 12.5 12.0	41.8 -0.7 13.0 12.1 12.5 12.0	43.0 -0.8 13.2 12.2 12.8 12.1	43.2 -1.1 12.8 11.9 12.2 12.4	41.9 -2.5 12.2 13.3 13.9 12.0		42.5 -0.9 12.5 12.2			
	Av. Av. Diff. Max. Min. Av. Av.	43.3 -0.9 13.0 12.2 12.6 12.2	43.3 -0.3 13.5 12.2 12.9 12.6	42.0 -0.6 12.6 12.0 12.2 12.1	41.8 -0.8 12.9 12.0 12.5 12.0	41.8 -0.7 13.0 12.1 12.5 12.0	43.0 -0.8 13.2 12.2 12.8 12.1	44.3 43.2 -1.1 12.8 11.9 12.2 12.4	41.9 -2.5 12.2 13.3 13.9 12.0		-0.9 12.5 12.2	43.6	4.86	100.0
	Av. Av. Diff. Max. Min. Av. Av.	43.3 -0.9 13.0 12.2 12.6 12.2	43.3 -0.3 13.5 12.2 12.9 12.6	42.0 -0.6 12.6 12.0 12.2 12.1	41.8 -0.8 12.9 12.0 12.5 12.0	41.8 -0.7 13.0 12.1 12.5 12.0	43.0 -0.8 13.2 12.2 12.8 12.1	44.0 44.3 43.2 -1.1 12.8 11.9 12.2 12.4	41.9 -2.5 12.2 13.3 13.9 12.0		42.5 -0.9 12.5 12.2			
Basis Weight, 16.	Institute Mill Institute Mill Max. Min. Av. Av.	-0.9 13.0 12.2 12.6 12.2	44.4 42.6 43.6 43.3 -0.3 13.5 12.2 12.9 12.6	43.6 42.0 42.6 42.0 -0.6 12.6 12.0 12.2 12.1	-0.8 12.9 12.0 12.5 12.0	-0.7 13.0 12.1 12.5 12.0	-0.8 13.2 12.2 12.8 12.1	44.3 43.2 -1.1 12.8 11.9 12.2 12.4	44.0 42.2 43.4 41.9 -1.5 12.2 11.3 11.9 12.0		43.4 42.5 -0.9 12.5 12.2	43.6		
Basis Weight, 16.	No. Max. Min. Av. Kv. Diff. Max. Min. Av. Av.	- 45.0 43.6 44.2 43.3 -0.9 13.0 12.2 12.6 12.2	- 444,4 42.6 43.6 43.3 -0.3 13.5 12.2 12.9 12.6	- 43.6 42.0 42.6 42.0 -0.6 12.6 12.0 12.2 12.1	- 43.8 41.6 42.6 41.8 -0.8 12.9 12.0 12.5 12.0	- 43.8 42.2 42.5 41.8 -0.7 13.0 12.1 12.5 12.0	- 44.2 42.8 43.8 43.0 -0.8 13.2 12.2 12.8 12.1	- 44.6 44.0 44.3 43.2 -1.1 12.8 11.9 12.2 12.4	- 44.0 42.2 43.4 41.9 -1.5 12.2 11.3 11.9 12.0		43.4 42.5 -0.9 12.5 12.2	43.6		
Basis Weight, 16.	Institute Mill Institute Mill Max. Min. Av. Av.	43.3 -0.9 13.0 12.2 12.6 12.2	44.4 42.6 43.6 43.3 -0.3 13.5 12.2 12.9 12.6	43.6 42.0 42.6 42.0 -0.6 12.6 12.0 12.2 12.1	41.8 -0.8 12.9 12.0 12.5 12.0	41.8 -0.7 13.0 12.1 12.5 12.0	43.0 -0.8 13.2 12.2 12.8 12.1	44.6 44.0 44.3 43.2 -1.1 12.8 11.9 12.2 12.4	44.0 42.2 43.4 41.9 -1.5 12.2 11.3 11.9 12.0		42.5 -0.9 12.5 12.2			

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual reading.

SUMMARY OF INSTITUTE AND MILL DATA July, 1961 MILL D -- 42-LB. LINERBOARD TABLE VII

Diff.	+10	٠ ٢	- 2	+	+25	+14	+55	+14	+10	8,	3	+10					
g./sb.	3,40	331	340	333	338	338	£	336	3#5	335		337					
Tear, ss Mac te	330ª	332ª	大大	337ª	313 ^a	3248	3184	322ª	332ª	3178	7+0	327	33.5	7	93.6	87.7	-
Elmendorf T Cross Institute Max. Min. A	305	596	₹ 36	312	256	ģ	272	280	Э́с	ä							
Ela Max.	368	戴	004	360	352	352	352	集	360	700	0,7						
eet Diff.	-28	-33	‡	-33	-25	-53	-53	-33	₹	4	₹	-31					
g./she	253	256	255	256	252	250	255	5.7	259	,	253	52					
ear,	281ª	289ª	299ª	289ª	274	273ª	278	285ª	293 ^a	q	293"	285	0	607	98.6	86.1	
Elmendorf T In M Institute Max. Min. A	232	248	256	232	240	240	248	847	240	,	256						
Elme In	美	素	360	320	328	336	320	320	336		ģ M						
d.	٠ -	-it 1	÷	-10	-4· 1·	ن	2	+ 1	(°		J	~					
frength,	Ħ	775	113	7175	2112	113	113	ä	114	į	777	717			_		_
" · 1 §	118	911	111	122	fi fi	113	3115	777	111	1	717	[†] נו		fi	100.9		103.6
Bursting p.s.i Institute Max. Min. A	å	93	83	100	8	29	98	82	Q.		8						
Max	141	138	130	139	139	138	130	13#	330	7	130						,
Diff.	0.0	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0			-0.2	0.0					
la .	0.21	0.21	15.1	12.0	12.0	12.0	12.0	12.1	9	?	12.0	12.21					
Caliper, points titute Mil lin, Av. Av.	. o.	17.71	12.2	12.1	0.51	0.51	12.1	12.1		r K	12.2	12.1		12.7	95.3		0.96
Calipe Institute Min.				8.11	11.5	9.11	8.11	8, (1		1.3	11.6						
Ins					2.21	22.3	9: दा			13.0	12.7						
i ii	, 0	-0-2	-0.2	-0.3	-0.7	-0.7	9.0-		•	-0.5	-0.7	v O	}				
	,		•			42.2	41.9	. a	2	42.2	41.8	0 27	,				
Basis Weight, 1b.										45.7		2 5 51		42.7	3.5	`	6.79
Basis W			4.54 9.14	41.8 42	45.0 42	45.0 42	8 17		0.24	75.0 4	42.0 42.5	ž	ř	#	ð	`	6
ן און י	המא. הנוווי.	20.04	1 8 E	17 17 27						4 4 60	43.2 4						
,										t t	. 			: e6			
		-1 P	4 -			۰ -			-1				verage	1 Avera			
į	rinish 	¥ .	, p		3	3		*	3	T.		:	MILL A	ve Mil.	4	0. • 10.1	ex. \$
Date	Made	19/61/9	10/22/0	19/15/19	19/0/10	10/2/1	10/0/2	TQ/0T/)	7/13/61	19/81/2	7/22/61	•	Current Mill Average:	Cumulative Mill Average:	נו אַ	FILL Sactor, o	Mill Index, \$

 a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VIII

SUMMARY OF INSTITUTE AND MILL DATA July, 1961

MILL E -- 42-LB. LINERBOARD

Elmendorf Tear, g./sheet Cross Machine Institute Mill Max. Min. Av. Av. Diff.	456 352 406 ⁸ 403 - 3	6 - 604 904	380	106.8	108.8				392 312 349 ^a 376 +27	400 320 361 ^a 369 + 8	355 373 +18	362	98.1	95.2	
Elmendorf Tear, g./sheet In Machine Institute Mill Ax. Min. Av. Av. Diff.	353 -21	, 353 -21	2	110.3	113.0				1 ₃ 340 + 9	0 339 -21	5 340 - 5		98.3	104.2	
Elmendorf Tean In Mac) Institute Max. Min. Av.	432 336 374	374	339	אנו	î				368 304 331ª	392 320 360	345	. 351	6	10	
ength, ge Hill Av. Diff.	Ţ.	ţ.							?	ω	5-				
rengtb 23.86 Mill Av.	103	103		O)	•				109	107	108		6	2	
Bursting Strength, P.s.1, gage Institute Mill Max, Min, Av. Av. D	83 100	100	501	96.2	90.9		ILL DATA	OARD	111 %	95 115	113	77	100°	102.7	
Bu Ins	021					Ħ	INSTITUTE AND MILL DATA July, 1961	MILL F 42-LB. LINERBOARD	130	127					
Dire.	-0.1	-0.1				TABLE IX		42-11	-0.1	0.0	0.0				
	9.टा	37.6	•				SUMMARY OF	MILL F	12.3	12.4	75.				
Caliber, points Institute Mill Max. Min. Av. Av.	१३.० घ.० घ.७	12.7	5.51	101,6	100.8		S		13.0 11.8 12.4	13.0 12.0 12.4	12.4	12.4	100.0	4.86	
Diff.	-1.2	-1.2							-0.3	-0.5	4.0-				
	42.9 -1.2	42.9 -1.2							43.1						
Basis Weight, lb. Institute Mill Max. Min. Av. Av.	14.6 42.8 44.1	44.1	42.9	102.8	101.6				44.0 42.8 43.4 43.1 -0.3	45.0 42.6 43.8 43.3	43.6 43.2	43.4	100.5	100.5	
Date Mch. Made Finish No.	7/10/61 S.F. 7	Current Mill Average:	Cumulative Mill Average:	Mill Factor, %	Mill Index, %				6/29/61 W.F	6/29/61 W.F	Current Mill Average:	Cumulative Mill Average:	Mill Factor, \$	Mill Index, %	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE X SUMMARY OF INSTITUTE AND MILL DATA July, 1961

MILL G -- 42-1B. LINERBOARD

eet	. Diff.	ì		i	ł	ļ	1				
Elmendorf Tear, g./sheet Cross Machine	Æ.	}	}	İ	}	1	1				
dorf Tear, g./ Cross Machine	13	386ª	410a	423ª	3778	e†72†1	415a	904	399	101.8	108.8
Cro	Institute x. Min. A	352	336	352	320	376	352				
Ela	Max.	424	\$	488	416	₹ 2	964				
leet	Diff.	;	1	l	{	}	ŀ				
Elmendorf Tear, g./sheet In Machine	M1.11 Av.	i	ł	-	ļ	-					
orf Tear, g In Machine	Av.	3#3	410a	383	345a	376a	375ª	372	361	103.0	112.4
endori	Institute Max. Min. Av.	ф Эф	景	320	₹ %	328	328				
E]B	Max.	368	युर	1 04	392	01717	735				
•	Diff.	‡	+5	‡	7	φ	₩,	₹,			
Bursting Strength, p.s.i. gage	MA11 Av. Diff.	011	107	112	106	105	112	109			
rsting Streng p.s.i. gage	Institute Max. Min. Av.	106	705	108	104	66	55	104	105	0.66	ş.
Burst:	Institute x. Min. A	đ	69	82	83	62	25				
	Max.	127	123	123	117	131	125				
	Diff.	-0.3	-0.5	4.0-	-0.4	4.0-	9.0-	4*0-			
ints	M41.1	11.6	12.8	12.5	11.8	12.2	27.21	12.2			
Caliper, points	Av.	11.9	13.3	12.9	12.2	12.6	12.8	12.6	12.7	99.5	100.0
Calti	Institute . Min.	11.5	12.8	22.2	12.0	٥.2	12.1				
	Institute Max. Min.	9.11 5.11 5.21	14.2 12.8	13.8 12.2	12.5 12.0 12.2	13.2 12.0 12.6	13.4 12.1 12.8				
	Diff.	+0.2	77.0+	+0.3	-1.0	-1.0	9.0-	-0.3			
t. 1b.	M3.11 AV.	45.4	44.2	44.1	42.2	4.64	0.44	43.4			
Basis Weight, 1b.	Min. Av.	42.2	43.8					43.7	43.5	100.5	100.7
Basis	Institute Min. Av	9.01	9.04	12.2	12.0	43.4	13.6			r	r-1
	Max.	43.8 40.6 42.2 42.4 +0.2	45.8 40.6 43.8	44.6 42.2 43.8	43.8 42.0 43.2	4.44 4.64 8.64	9.44 8.54 W.6				
	Mch. No.	Н	2	. 63	щ	2	2	 90	srage:		
	Finish	WFIS	WF1S	WF1.S	WFIS	WF1.S	STT.	11 Avera	MILL AVE	۲۲. مر	₩ .
	Date Made	19/08/9	19/06/9	19/1 /2	7/14/61	19/21/2	19/61/2	Current Mill Average:	Cumulative Mill Average:	Mill Factor, %	Mill Index, 🎉

 $^{
m a}$ Phis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit,

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA July, 1961 MIL H -- 42-LB, LINERBOARD

			D C	Baste Weight 1h	÷			7. t. t.	Caliber, points	1		Bur	Bursting Strength,	Strengt	.	Elmend.	Elmendorf Tear, g./sheet	Ir. 8./	sheet	Elme	ndorf	Elmendorf Tear, g./sheet	g./she	et	
Date		Mch.	Institute	ite			Ţ	Institute	1	Mill		Inst	Institute	1		Inst	Institute	H H H		Ins	Institute	×	H		
Made	Finish	No.	Max. Min.	AV.	Av. Diff.	Diff.	Max.	Min.	Av.	AV. D	Diff.	Max. M	Max. Min. Av.		Av. Diff.	Max. Mi	Max. Min. Av.	Av.	mff.	Kax.	Max. Min. AV.		Av. I	Diff.	
6/26/61	W. F.	8	43.8 42.0 43.0	43.0	43.1	+0.1	15.1	11.5	11.9	11,8	-0.1	142 8	84 112	77	+5	312 264	4 286	324	+38	₹ 26	320 3	343ª	袁	141	
6/26/61	λ. F.	۸	44.0 42.2 43.4	43.4	43,1	-0.3	12.2	11.2	11.8	11.8	0.0	139 B	89 110	110	0	3= 26=	4 299	316	+17	352	312	337ª	357	+20	
6/29/61	W.F.	н	43.2 42.6 43.0	43.0	43.0	0.0	1.21	11.3	11.9	11.8	-0.1	139 107	121 %	118	£,	3#4 248	8 304ª	318	+17+	392	320 3	352ª	361	6 +	
6/29/61	W.	н	43.0 42.0 42.4	45.4	42.7	+0.3	12.1	11.2	11.9	12.0	+0.1	130 10	100 115	118	+3	392 272	2 315ª	327	77,	900	305	352 ^a	375	£23	
19/81/2	¥. F.	н	44.0 42.6 43.6	143.6	43.5	†*O-	12.5	11.5	12.0	. 8.11	-0.2	130	98 114	118	7	440 280	0 333ª	£ 2	+10	400	320 3	347ª	378	-31	
19/81/2	N.	н	44.0 43.0 43.8	43.8	43.3	-0.5	12.9	11.5	12.2	75.0	-0.2	132 9	93 114	†	0	392 288	8 341ª	1 327	-14	385	296 3	341a	380	+39	
Current Mill Average:	ill Avera	:eg		43.2	43.1	1.0-			P.0 11.9		-0.1		77	115	1 +		313	326	+13		e,	345	373	-28	
Cumulative Mill Average:	e Mill Av	rerage:		43.4					12.0				116				322				6.7	365			
Mill Factor, %	or, %			99.5				Ä	100.0				98.3	ë.			97.2	₹.				\$			
Mill Index, \$	₩.			5.66					95.2				103.6	٠,			9. \$	9				92.5			

 $^{\rm a}$ This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XII

SUMMARY OF INSTITUTE AND HILL DATA July, 1961

MILL I -- 42-LB. LINERBOARD

neet		£ 5		0 7	4	ر ا	. 	+ 4	. 				
Elmendorf Tear, g./sheet	hine	M111	136	777	£ .	£	325	36	34	`			
f Tear	Cross Machine	te Av	2578	777	ું જું	3524	358ª	360a	358	, F	10,	96.0	
endori	Ğ	Max. Win. Av.	320	5 6		320	336	328					
EL.	ľ	Max.	7	71.1	7	376	392	004					
leet		Diff.	0	` =	;	-10	-29	-15	-15				
8./s	9	AV.	283	250	5	283	279	285	1 82				
Elmendorf Tear, g./sheet	In Machine	AV.	262	3008		1567	38	300a	299	284	105.3	90.3	
endorí	7	Max. Min. Av.	94.8		3 6	o V	264	248					
Elm	1	Max.	336	3,40	2 6	750	352	敖					
•		Av. Diff.	7	?	٠ -:	ŧ	0	7	-1				
rength	11.50	AV.	108	113) ;	110	77	91	111				
Bursting Strength,	1	Max. Min. Av.	109	115	1	1	2112	111	112	109	102,8	101.8	
Burst;	Instituto	Min.	90 109	83	, ,	2	ဆ္ထ	88					
	ř	Wax	135	137	140	2	128	1,34					
		Diff.	4.0-	-0.5	7 0		9.0-	-0.7	-0.5				
oints	MAL	Av.	13.1	13.0	13.0	;	13.1	13.1	13.1				
Caliper, points	0	Av.	13.5	13.5	13.4	}	13.7	13.8	13.6	12.5	108.8	107.9	
Calir	Institute	Min.	13.0	13.0	8.21	<u>.</u>	13.0	13.0			ਕ	Ā	
	Ę	Max. Min.	14.1 13.0 13.5	14.0 13.0 13.5	4.61 8.21 0.41		14.1 13.0 13.7	14.2 13.0 13.8					
		olff.	-0.5	0.0	-0.2		0:0	0.0	-0.1				
, 1b.	Mi11	Av. I	42.5	43.0	12.7		6.5	42.8	45.8				
Basis Weight, 1b.		Max. Min. Av.	44.0 41.2 43.0 42.5 -0.5	4.6 41.4 43.0	44.2 41.6 42.9 42.7		41.4 42.9 42.9	41.2 42.8 42.8	15.9	43.2	98.2	98.8	
Basis	Institute	'n.	1.2	1.4.1	1.6		~ †. .⊢	1.2	7	7	Ů,	0,	
	Ins	ax.	7 0.4	4 9.4	4.2.4		14.2 4	t 2° th					
1	اء		1	ℷ	#		∌	3		 9			
		No.	1	7	н	•	1	-	rage:	Avera			
		Finish	W.F.	¥	G.	;	₹	¥.	till Ave	re M111	or, %	×.	
	Pate	Made	5/22/61	5/27/61	6/ 3/61	177717	19/01/6	6/28/61	Current Mill Average:	Cumulative Mill Average:	Mill Factor, &	Mill Index, %	

^aThis average includes the readings for one or more specimens which tore beyond the 3/5-inch limit,

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIII

SUMMARY OF INSTITUTE AND MILL DATA July, 1961 Σ

LINERBOARD
42-LB.
+
ILL

1)															
heet	1 2	.4	1 5) C+	2 5	÷ 5,	, ;		3 4		5	5			
8./8				4.24 0.43	2 4	}	Ş	, E	(1)	!	418	}			
Elmendorf Tear, g./sheet	itute %111	77R ^a	1,00 a	3 2	3508	383a	1254	3608	3628	Į.	36	, y	()	7.00	0.76
nendor	Institute	328	, %				280	ģ							
E	Š	172 t	1	36.	416	140	387	408	416	Ì					
leet.	Diff.	#2#		(7)	· +		+	+54	1,00		+17	,			
. g./s	M111 Av.	335	1 7	324	305	£ 2	291	315	316	,	321				
Elmendorf Tear, g./sheet	tute M1	311	327	562	393	3159	2874	288	306		305	315	, 4	, 6	į
tendor	Institute	797			565	272	256	540	248						
Œ	Xax X	336	360	352	352	376	328	328	360						
	DIĘ.	4	7	+2	0	7	0	7	7		0				
Bursting Strength,	Mi 11	ਜ	115	109	110	10	107	108	911		110		_	_	
eting Stren	ate.	117	119	107	סנו	106	107	106	Ħ		110	109	100.9	100.0	
Burs	Institute Max. Min. A	85	8	8	8	80	98	8	102						
	Way	130	148	129	132	128	121	119	122						ţ
	mff.	+0.1	+0.5	-0.7	0.0	+0,1	+0.1	+0.1	0.0		0.0				6 1
oints	M111 Av.	12.5	9,21	11.8	11.9	8.21	11.8	11.8	75.4		12.2				
Caliper, points	AV.	. ZI	15.1	12.5	11.9	12.7	11.7	n.?	7. 21		27.21	22.5	9.76	8.96	
Cali	Institute Min.	12.0	11.7	12.0	n.5	12.1	n.0	0.11	11.8						
		12.9	12.7	12.9	12,4	13.2	12.0	6.ध	6.51						
	Diff.	+0.6	+0.2	†* 0+	+0.2	-0-3	-0.3	4.0-	-0.5		0.0				
Basis Weight, 1b.	AV.	43.8	£.5	45.4	43.0	£.43	45.9	42.6	43.5		43.4				
Weigh	Av.	4.6 41.6 43.2	£.3	42.0	42.8	9.44	43.2	43.0	0.44		43.4	43.4	100.0	100.0	
Basis	Institute Max. Min. Av.	9.14	43.8	0.04	42.0	43.8		45.0	42.6				~	7	
	Max.	9.#	46.0 43.8 44.3	43.0 40.0	44.2 42.0 42.8	9.44 8.64 0.64	44.0 42.2	. 44.0 42.0 43.0	45.0 42.6 44.0						
	Mch.	٦	н	ч	м	7			٦			erage:			
	Finish	in E	W.F.		W.F.	W.F.	W. P.	W.F.			.ll 4vera	MAII AV	ř. 4	8 ,₽.	
	Date Made	6/24/61	6/25/61	6/26/61	19/22/9	1/ 2/61	19/4 //	1/ 1/61	19/11/61		Current Mill Average:	Cumulative Mill Average	Mill Factor, &	Mill Index, 🛠	

TABLE XIV

SUMMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL K -- 42-LB. LINSABOARD

No samples submitted.

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XV

SUMMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL L -- 42-LB. LINERBOARD

Date Mc Made Finish Mc 6/23/61 WF1S 2 6/27/61 WF1S 2 6/28/61 WF1S 2 6/28/61 WF1S 2 6/28/61 WF1S 2 7/.7/61 WF1S 2	Mch. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Basis Walg Institute Max. Min. Av. 44.2 42.2 43.4 44.2 42.2 43.4 44.2 42.2 43.4 44.8 43.8 44.2 44.0 42.2 43.6 44.0 42.2 43.6 46.0 43.2 44.8	Basis We Institute	표	· ·		Callpe Max. Min. 13.6 12.4 1 13.9 12.8 1 13.3 12.1 1 13.2 12.1 1 13.2 12.1 1 13.7 12.7 1	Calibre Min. A Min. A Min. A Min. A Min. B M	7			Burstia Linstituti Max. Min. 139 91 132 98 138 80 137 86 130 86 130 88	Bursting Strength, 10-5:1. Eage 10-5:1. Ea	Eagen Mills (Av. 106) 106 106 109 109 109 109 109 109		15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Elmendorf Teal Institute Mac Max. Min. Av. 32 250 339 ⁸ 32 250 339 ⁸ 36 312 346 ⁸ 424 312 363 ⁸ 400 296 346 ⁸ 424 312 360 ⁸	ु: तृ ि	Av. I Av. I 326 329 323 323 333	Diff13 -10 -11 + 7 -10 + 5 -27	Elme Max. 1008 416 464 4672 408 4664 4664 4664 4664	Elmendorf T	8	# # 1/8 # 1/	Diff. +30 +38 - 4 +28 +17 +36 +25
ra Re			-	43.8	45.9	6.0-		ಟ	13.1 E	12.5	9.0-		Ξ	108	۱ ع			£	338	F		. 1	382	907	1 2+
Cumulative Mill Average:	age:		7	43.4				21	12.9				7					320				·	365		
				,				}	;				1					3					,		
Mill Factor, \$			ri	100.9				101.6	9.				100.0	o.		,		107.8				,	104.7		
			á	100.9				104.0	0,				100.9	ڼه				104.2					4° 201		

TABLE XVI

SUMMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL M -- 42-LB. LINERBOARD

No samples submitted

and a verage includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVII

SUMMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL N -- 42-LB. LINERBOARD

13													
sheet Diff.					£	+37	9 •	+37	-10	गंट	ļ		
Elmendorf Tear, g./sheet Cross Machine Institute Mill Ax. Min. Av. Av. Diff					422	410	393	408	379	703	3	.0	_
Elmendorf Tear, g./ Cross Machine Institute Mill Max. Min. Av. Av.					3794	373ª	399ª	371ª	369ª	805	372	101.6	101.3
Cross Institute					336	328	336	蕉	320				
<u>α</u> ∏ 8					40E	904	472	408	408				
heet Diff.					-14	-36	-16	+	-20	-12	i		
Elmendorf Tear, g./sheet In Machine Institute Mill Ax. Min. Av. Av. Dif:					354	302	316	307	300	310			
Elmendorf Tear, g In Machine Institute Mi Max. Min. Av. Av					338ª	338ª	332ª	306 ^a	320ª	327	325	100.6	96.8
Imendorf T In M Institute x. Min. A					260	248	272	56	272				
ra E					004	38	400	336	400				
ength, ge Mill Av. Diff.					0	0	7	7	‡	7			
1⊣ di					47	47.1	011	107	011	Ħ			
Bursting Stren p.s.i. gage Institute Mi Max. Min. Av. Av			. DATA	A	114	114	111	706	106	ů	109	100.9	100.0
Bursting D.s.i. Institute x. Min. At	ted.		D MILL	ERBOAR	89	95	88	89	8				
E SE	submit	XVIII	TUTE AN	B. LIN	148	138	132	130	128				
Diff.	No samples submitted.	TABLE XVIII	SUMMARY OF INSTITUTE AND MILL DATA July, 1961	MILL 0 42-LB. LINERBOARD	4.0-	9.0-	9.0-	4*0-	9.0-	-0.5			
Mill Av.	S O		mary of	MIL 0	12.1	12.9	12.6	12.9	13.0	12.7			
Caliper, points titute Mil Mn. Av. Av.			SU		5.5	13.5	13.2	13.3	13.6	13.2	13.0	101.5	104.8
Calipe Institute Min.					11.9	12.5	12.1	12.9	13.1				-
Ž F					13.5	14.2	14.2	14.0	14.1				
Diff.					4.0-	-0.1	0.0	-1.2	8.0-	4 *0-			
Basis Welght, 1b. titute Mill fin. Av. Av.					43.4 41.6 42.3 42.7 +0.4	43.8	43.0	43.4	2.4.5	43.4			
s Weigh					12.3	13.9	13.0	9.	5.0	43.8	43.4	100.9	100.9
Basis Institute Min.					1.6	43.0 43.9	41.6 43.0	3.8	3.8	7	~	ä	H
Basie Institut Max. Min.					4.54	17:17	43.6 4	45.8 43.8 44.6	46.2 43.8 45.0				
Mch. No.					-	Н	-	7	r-1	9 .	rage:		
Finish					!	}	}	-	1	l Averag	MIL Ave	₩.	æ
Date Made					6/ 4/61	6/12/61	6/12/61	19/11/9	19/41/9	Current Mill Average:	Cumulative Mill Average:	Mill Factor, %	Mill Index, \$

 a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE KIX SUMMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL P -- 42-LB. LINERBOARD

sheet		Diff.	,	+ 2	+27	4	+	+38	+13				
. g./s	chine	AV.	700	421	439	604	433	429	422				
Elmendorf Tear, g./sheet	Cross Machine	AV.	405a	e414	4129	e104	·431ª	391 ^a	604	1 0	101.2	109.7	
endor	Cross	Max. Min. Av.	368	368	360	336	376	328					
G	-	Aax.	₹	460	472	456	472	8474					
heet	{	Diff.	1 43	+58	44	+ 24	+26	+28	14 3				
8./3	Lne Kr 11	Av.	405	413	604	373	412	379	336				
Elmendorf Tear, g./sheet	In Machine	AV.	362ª	355ª	332ª	3498	386ª	351ª	356	366	97.3	107.6	
endor	Tretttite	Max. Min. Av.	दार	ğ	596	न्नू	328	ģ					
E		Max.	140	435	376	004	512	촶					
•		Av. Diff.	Ţ	75	-2	2	ŧ,	7	0				
rength	Mill		717	H	110	110	109	120	777				
Bursting Strength,	titute Mil	Max. Min. Av.	109	111	117	211	106	911	777	108	103.7	101.8	
Burst	Institute	Min.	ま	8	100	%	81	87					
	H	Max.	129	138	139	141	927	139					
		biff.	4.0-	-0.3	-0.2	-0.1	+0,1	-0.2	-0.2				
inta	MILLE	AV.	22.0	12.5	11.9	12.2	15.21	0.51	17.71				
Caliber, points	e e	AV.	75.71	13.3 12.2 12.8	12.1	12.3	0.21	12.2	१.अ	12.7	6.96	9.76	
S.	Institute	Max. Min.	13.0 12.0 12.4	25.21	11.2	11.9	11,2	11.4					
	년	Max.	13.0	13.3	13.0	12.9 11.9	12.7 11.2	12.8 11.4					
		Mff.	9.0-	-0.3	-0-3	-1.1	-0.1	-0.5	-0.5				
t. 1b.	Mili	Av.	43.3	43.9	43.7	43.2	₹ •:	0.4	43.7				
Basis Weight, 1b.	9	Av.	43.2 43.9	44.2	o. #	€.#	4.44	44.5	5.44	43.7	101.1	8.101	
Basi	Institute	Min.	43.2	9.64	42.6	43.8	43.44 44.64	44.0 44.5			-	7	
	Ĕ	Max.	44.2	8.4	0.44 6.54 6.44.0	45.8 43.8 44.3	45.8	45.2					
	Mch.	, o	ı	•	•	1		,	 00	Fage:			
		Finish	¥.F	¥.5	W.F.	¥.	W.F.	W.F.	ll Avera	Mill AV	₽¢.	₩.	
	Date	Made	6/28/61	7/ 3/61	19/6 //	19/9/2	19/9//	19/91/2	Current Mill Average:	Cumulative Mill Average:	Mill Factor, %	Mill Index, %	

 $^{
m a}$ This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings,

TABLE XX
SUPMARY OF INSTITUTE AND HILL DATA
July, 1961
MILL Q -- 42-LB, LINERBOARD

leet.	Diff.	1 2+	+23	, 21	, e	3 7	<u> </u>	3 (÷,	424	ï		
g./sh	AV.	401	\$	403	417	7727	#O#	41.7	,	410	1		
	AV.	377ª	381ª	3864	3203	3934	3838	2858	3	383	32	, [5]	102.7
lmendorf Te Cross Institute	Max. Min. Av.	यूर	สู								•		, ,,
매급 기	Мах.	1 0 1	435	954	435	435	1	416	}				
beet	off.	+10	+10	+	+14	٦,	. ~!	+17	Ī	+ 2			
Elmendorf Tear, g./sheet In Machine Institute Mill	AV.	355	323	321	35	328	359	335	}	328			
orf Tear, g In Machine tute Mi	AV.	걾	313	320	320ª	333	331 ^a	3184	,	321	321	100.0	97.0
lmendorf Te In Mi Institute	Max. Min. Av.	256	272	272	280	272	₹ S	248					
HE I	Max	368	385	象	360	376	ģ	368					
	AV. DILL.	ς-	7	٨,	5-	7	9	ထု		٨.			
5 81		fi	71	112	777	7	911	110		Ħ			
Bursting Streng D.S.1. gage Institute Mil	.	911	ŤŢ	117	711	115	116	118		116	113	102.7	105.5
Bursting D.s.1 Institute		35	86	8	ま	8	35	86					
Í		7.5	133	145	143	145	139	136					
£		7.0-	-0.3	4.0-	-0.3	-0.2	-0.1	-0.2		-0.2			
ints Mill Av.	;	9.	11.7	11.7	11.8	11.8	11.9	11.8		11.8			
Caliper, points		2	22.0	12.1	12.1	12.0	0.21	12.0		०.ध	5.51	0.96	95.2
Calipe Institute Min.		*	11.7	9.11	77.71	7.11	11.11	77.77				-	
Call Institu		;	12.4	9.21	12.8	12.8	22.3	22.2					
Diff.	u C	?	8.0-	8.0-	9.0-	-0.5	9.0-	4.0-		9.0-			
	1 64		45.2	42.2	42.9	43.2	43.0	43.3		42.7			
Basis Weight, lb.	14. A CA		43.0 4	43.0 4		43.7 4				43.3 42	۲.	н.	ω
tute	77 6 67	:	.2 43		4 43.5	8 43	9.6 43.6	44.2 42.8 43.7		£,	43.7	99.1	99.8
Basis Institute Max. Min.	CT 0 ET	2	44.0 42.2	43.6 42.2	4.24 0.44	2 42.8	44.0 42.6	2 42					
•	43		\$	43	∄	44.2	₹.	₹					
Mch. No.	~)	8	8	۷	7	2	2		age:	verage		
Finish	(s.			Y.F.	×.	K. F.	(#. }*	W.F.		ill Aver	e Mill A	or, %	×.
Date Made	6/15/6.	1 1	19/52/9	5/23/61	6/28/61	6/28/61	19/06/9	6/30/61		Current Mill Average:	Cumulative Mill Average:	Mill Factor, \$	Mill Index, %

 $^{
m a}$ Tbis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXI SUMMARY OF INSTITUTE AND HILL DATA July, 1961

MILL S -- 42-IB. LINERBOARD

set			Diff.		+	9	Ť	ą		+					
Elmendorf Tear, g./sheet	hine	MII		:	366	c ac	રે	358		369					
Tear	Cross Machine	Ι,	Max. Min. Av. Av.	,	362	364.9	ξ	369ª		365	746	2	5	7(.1	6.76
endorf	CL	Institute	ď.	,	400 320 362	eithe her	?	416 328 369ª			•	•			
EL		H	Max.	4	904	38	į.	416							
leet			niri.	(۱ پ		`	-18		-10					
g./s	ne ne	Ä	ΑV	ć	21.7	335	1	262		317					
Elmendorf Tear, g./sheet	In Machine	9	Max. Min. Av. Av. Diff.	200	750	340g		315		327	338		6.7		98.8
endorf	ű	Institute	ų.	345 227 336	7)7	384 288 340ª		564							
		H)	Max	376	3	38		368							
	1	40.	;	-5		۹		7	"	`					
Bursting Strength,	Fe C L	Max. Min. Aw Am Disse	7 · Au	108		58		ij	8						
ng Str	Institute Mall	1				Ę			2112		111		100.9		101,8
Bursti	stitu:	ž		82 110		8	;	8							
	-	Š		125	,	128	;	7							
		Diff.	•	-0.2	•		0	9	-0.1						
ints	M4 11			11.2	:	1:17	5	7	11.2						
Caliber, points		AΦ		†d	7	·			11.3		8.11	0 20	0.)•40
Calibe	Institute	in.		.0.8	-	1	0	1	-	,	-1	c	ν.	đ	Ď.
	Insi	Max. Min. Av		11.8 10.8 11.4	ייר ווו פוו	2	כינו פחר אווו	;							
	, ,								_						
		H		o O	0	•	+0.2		+3.5 +0.1						
ht, lb	117	γA.		£.	73.4		43.6	•							
Basis Weight, 1b.	Institute	Max. Min. Av. Av. Diff.		4.0 41.8 43.1 43.5 +0.5	14.0 42.8 43.7		4.0 42.4 43.4		43.4	0 171	;	98.6		100.0	
Basi	stitu	Min.		D. 14	42.8		45.4								
	Ħ,	Max.	3	? !	0.4		9								
	Mch.	S S	¢	^	٣		~		: eg	. 00 540.					
	40,440	STUTZ	5		Υ.F.		¥.		ill Avera	M41) Av	1	or, %		۲. هر	
į	Late Vade		19/91/9	12/24/	7,54/61		6/25/61		Current Mill Average:	Cumulative Mill Average:		Mill Factor, \$		Mill Index, &	
			ų.	•	4	,	J		U	O		<i>5</i> .;		5 .	

 $^{
m a}$ nis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXII SUMMARY OF INSTITUTE AND MILL DATA JULY, 1961

MILL T . - 42-LB. LINERBOARD

Elmendorf Tear, g./sheet Cross Machine Institute Max. Hin. Av. Av. Diff. 432 352 395 ^a 415 +20 440 368 397 ^a 413 +16	396 414 +16 393 100.8 106.2
Slmendorf Tear, g./sheet	324 324 +20 324 96.9 94.9
Bursting Strength, D.8.1, Eage Institute Mill Max. Min. Av. Diff. 128 89 112 107 -5 127 99 110 107 -3	111 107 4. 111 100.00 100.9
Caliper, points Institute Mill Max. Min. Av. Av. Diff. 13.1 11.9 12.4 12.5 +0.1 13.2 11.8 12.5 12.6 +0.1	12.5 12.6 +0.1 12.8 97.7 99.2
Basis Weight, 1b. Institute Atl hax. Min. Av. Av. Diff. 43.6 41.8 42.4 49.2 +0.8 43.8 42.0 42.7 43.4 +0.7	42.6 43.3 +0.7 43.2 98.6 96.2
Date Mch. Made Finish No. 6/27/61 WF1S 1 6/35/61 WF1S 1	Current Mill Average: Cumulative Mill Average: Mill Factor, % Mill Index, %

 $^{
m a}_{
m Tnis}$ average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

include for each test (1) the average result obtained on each sample lot of linerboard and (2) a current mill average (calculated at the Institute) that represents the average of the averages obtained on the individual sample lots of linerboard evaluated at the mills during the current period. In addition to the presentations of Institute and mill data described above, Tables IV through XXII also include under each test heading a column labeled "Diff."

This column shows the differences between averages obtained at the Institute and those obtained at the mills. The data obtained at the Institute are used as the reference in calculating these differences.

The average test results obtained at the Institute and at the mills are summarized in Table XXIII. Shown in Table XXIII for each mill is the difference for each test between the current mill average based on Institute data and the current mill average based on mill data. In addition, for each test the maximum difference encountered in comparing Institute and mill averages for individual sample lots is shown. In Table XXIV, the difference for each test between current mill average based on Institute data and that based on mill data has been converted to per cent (based on Institute data as a reference). Corresponding data for the two preceding periods are shown.

A summary of the agreement obtained in the comparisons of Institute and mill test data for the current period is shown in Table XXV. This summary is based on the results given in Table XXIV. The tabulated data show the number of mills, and the percentage of all mills which this number represents, whose average test results for the current period fall within designated percentages from the average test results obtained at the Institute. It may

TABLE XXIII

Results)
Institute
end
Mil
(Average
T RESULT COMPARISONS
RESULT
TEST
P.
SUMMARY OF TEST

	E	7		4.4.6 6.4.6 8.4.6		222.66		164°		7287		396 414 418 420
	ø	n		43.4 43.5 40.1 40.5		11100		76779		327 317 -10 -18		365 369 +4 +19
	œ	7		43.3 6.6.7 6.6.6 6.8		21100 800 4.		116		321 328 +7 +17		383 410 +27 +38
mlts)	Ω,	9		43.7 -1-1		6.52.3 6.52.3		112		356 399 +43 +77		423 413 438
Institute Results	0	5		43.8 43.4 -0.4 -1.2		123.2		977 ⁴		327 310 -17 -36		378 424 424 443
nstit	z	0				1111		1111		1111		1111
and I	×	0				1111		1111		1111		
(Average Mill	ы	~		6.00 6.00 6.00 6.00 6.00		5.00 6.00 6.00 6.00		1198		533 733 733 733 733 733 733 743		385 706 +24 +38
Avera	M	0		1111		1111		1111		1111		1111
	م	60		43.4 43.4 00.0 00.0		12.2 0.0 0.0	印	9904	뒤	304 321 117 427	across	75+ 75+ 796
COMPARISONS	н	2	Weight	44.00 88.10.0	er I	13.6 13.1 0.5 0.7	Strength	2214	trength	299 284 -15	rength	358 354 -4 -14
RESULT	; ;	9	Basis W	43.2 63.1 60.1	Caliper	0.000	Bursting	71177	Tearing S	313 326 113 138	Tearing Strength	345 373 428 441
OF TEST	Ö	9		17.0°1		22799 97799	mı	104 109 +5 +8	Ţ	372	Tea	907
SUMMARY	Ĺz,	8		43.6 63.6 60.4		12.4		113 108 -5 -8		345 340 -5 -21		355 373 +18 +27
(A)	闰	H		42.1 12.9 1.2		72.00		901 801 801 801 801		374 353 -21 -21		404 403 604
	Q	10		4466 2000		1221		97 P.		235 254 -31 -44		327 337 +10 +25
	ပ	œ		43.4 42.5 10.9		122.5		44 44 44 64		319 284 -35 -57		354 329 -25 -51
	ф	9		4400 6000		14623		55144		328 44 +17		338 368 +30 +46
	4	~		43.1 42.7 10.4		12.0		109		368 371 +3 +26		406 435 429 452
	Mills ^a	No. of Samples Compared		Institute Mill Av. Diff. ^h Max. Diff. ^c		Institute Mill Av. Diff. ^b Max. Diff. ^c		Institute Mill Av. Diff.b Max. Diff.c		Institute Mill Av. Diff. ^b Max. Diff. ^c		Institute Mill Av. Diff. ^b Max. Diff. ^c

a Comparison based on averages involved only those samples on which mill test data were submitted.

Average difference is the difference between the Institute mill average and the mill average based on mill test data.

for any sample submitted by that particular mill. Maximum difference encountered in comparing the Institute average and the mill average

TABLE XXIV

Tear, across \$ 9 9 \$ 5 0 5 5 5 8 초충축 134 もささ 111 444 Bursting Strength 20°7 5.4 6.44 0 4 0 104 | | | 477 444 111 199 777 977 100 000 | | | 777 440 COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS Average Difference, Per Cent Period Current 171st 170th Current 171st 170th Current 171st 170th Current 171st 170th Mill ч Tear, across \$ \$ \$ \$ 0 0 0 0 0 0 \$ 0 0 0 8 かむっ 464 977 444 ተጥዓ 111 ‡ 5 5 0.9 977 370 272 245 5.44 1.46 0000000 ဝဝှိလှ 979 0000 000 1-0.5 0.5 600 600 600 600 000 0000 Current 171st 170th Current 171st 170th Current 171st 170th 71st 70th Mill O 国 O

TABLE XXV

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS

±7.5 ±10 ±15	·			12 12 15 80.0 80.0 100.0	12 14 15 80.0 93.3 100.0
est Resul		16	160.001	6°09	7 46.7
Institute and Mill Test Results		15 93.8	15 93.8	7.94	33.3
Institute and Mill Test Results 2 +3 +4 +5	16 100 . 00	13 81 ,2	11 68.8	33.3	33,5
Ins	15	12	8 0.0	^{1,} 26.7	20° 03
71	12 75.0	8 50 . 0	37.5	3 20.0	3 20.02
+0.5	31.2	3	2 12.5	000	00
	Basis weight Number of mills Percentage of all mills	Caliper Number of mills Percentage of all mills	Bursting strength Number of mills Percentage of all mills	Tearing strength, in Number of mills Percentage of all mills	Tearing strength, across Number of mills Percentage of all mills

be noted from this summary that agreement between the results obtained at the Institute and those obtained at the mills was generally very good.

entered the same for the same of the same

Preconditioning and conditioning data pertinent to the test results obtained at the mills are given in Table XXVI.

TABLE XXVI

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

Mill Code	Relativ Humidit		Time, hr.	Relative Humidity, %	Tempera- ture, °F.	Time, hr.
A B C D	50 34 - 35	No preconditions 72 76-77 No preconditions	24 8	52-64 No 48-52 76-86	69-73 conditioning 72 85-96	48 16
E F G H	!	72 No preconditional No preconditional No preconditional	ing.	No 50 50 50	conditioning 73 73 73	24 24 24
I J K L	40-68 50 50	76-82 73 No samp 72	0.5 24 oles submi 120	50 50 tted。 50	73 73 70 - 72	2448 24 120-288
M N O P	50 55 – 59		oles submi oles submi 48 48		70 73	3
Q S T		73 No preconditi n i No preconditioni		50 50 55 - 57	73 73 72-73	24 24

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