TECHNICAL RECORD BOOK

NO. 642

FOSECO, INC.

PLAINTIFF'S EXHIBIT
FOS-725

1952

RULES FOR RECORDING TECHNICAL WORK

1. All blanks in the top two and bottom three lines must be filled in on each page.

2. Notes should be clear, factual and legible. They should be recorded the day the experimental work is performed.

3. Notes should be entered in chronological order wherever possible and a new page be started for each new experiment.

4. Notes should be made in ink wherever possible. Indelible pencil alone may be substituted for ink.

5. All pertinent data is to be recorded directly in the notebook. Data on loose sheets must be attached to the notebook page as described in the memorandum explaining these rules. These sheets shall be stamped and witnessed.

6. No erasures are to be made. Erroneous entries are to be deleted by drawing a single horizontal line through them.

7. No blank pages should be left between recorded pages.

8. Deviations from the usual method or customary apparatus should be described and explained in detail.

9. The Patent Department should be notified when it is suspected that a given finding may be patentable.

10. At intervals of not longer than a week, the notes should be gone over with and explained to or read by a responsible person familiar with but not eligible for joint inventorship. This responsible person will indicate that he has read the notes or had them explained to him by signing his name in the indicated space and dating his signature. Prior to submission to the person for witnessing, it will be the responsibility of the person doing the work to cancel unused portions of the pages bearing the notes by means of a diagonal line.

1953

Name A. G. SANTIGHIAN

Date Note Recording

Started 07/31/74

Date Note Recording

Completed 03/03/75

Notes Continued From

Notebook No. —

Notes Continued in Notebook

No. 657

1954

INDEX

Subject Matter	Page
(1) Herman fiber bearing, ring recipe	1-2
(2) Profax paper bearing	3
(3) Improved version of EP 5465A (XS1599 & XS1599B)	4-5-6-7-8
(4) Kaolin bearing version of XS1599B	9
(5) Chicago Trial for EP 5669A & 5465A	10, 11
(6) Profax 31 Type material with 2% Asbestos	12, 13, 16, 18, 19,
(7) Herman fiber bearing Profax	14, 17, 24, 50
(8) Herman fiber & Wollastonite bearing Profax	25, 26,
(9) Antifoam 60	28
(10) Diamond Shamrock Chem. Co. Binders	29
(11) Plx with Herman (no X3562)	31
(12) X1281 max level into EP 5676	32; 33; 34
(13) M5701 (replacement for X3579)	35;
(14) Px 31B Type with 00E	36; 37;
(15) Px 31C Type with 00E	39;
(16) Px 10 Type with 00E	40;
(17) Cyanex (5476) with 00I	41
(18) Kalminex (asbestos free)	44; 45; 48; 49
(19) The lowest solids content admissible into 5672	46;
(20) M5715 (replacement for 177A)	47;
(21) Paper bearing Px (German recipe)	51;
(22) Plx paper bearing (EP 5298)	53; 54
(23) Stacley starches	55; 56; 57; 60; 62
(24) Adogen (suspending and dispersing agent)	59;
(25) M5733 (replacement for X3579)	61;
(26) EP 5465 + 2% paper → EP5672F	62-65;
(27) Density determination by water immersion	66-73
(28) Rayon & Polyester fibers	76-77;
(29) XS1610 (EP 5669A improved)	78-81
(30) SiC cements	80
(31) M 5777 and M 5778	82-83
(32) Plx + X3198 & 267 (XS1617 - XS1618 - XS1619)	85-88
(33) M 5776	89-90
(34) RM 245 into EP 5672P	91
(35) Ferro ring recipe	92-94-97; 98
(36) Melting points for X3562, 94C, 117, X2286, X1790	96
(37) EP 4651B replacing asbestos with paper	93-99

1955

INDEX

Subject Matter	Page

INDEX

Subject Matter	Page
(33) EP 1297 modified	99
	1957

INDEX

Subject Matter	Page

Project.No. 24082 Date of Work: 07/31/74 Work Performed by: A.G. Santiglia

Title or Purpose: Herman "Bearing Profax - Proflex Continued From:

(1)	(2)	(3)	(4)
131D → 68	68	68	68
576 → 15	15	15	15
319 → 15	15	15	15
177A → 2	2	2	2
sol. A.A → —	0.2	0.5	1
ft → 16	46	—	250 sec.
tr. str → 90.76 p.s.i	91 p.s.i	—	90 p.s.i.
g → 0.7116	0.7213	—	0.7025
moisture → 27.08%	28.3%	—	38.71 %
H_2O → 1000 ml	1000 ml	1000 ml.	1000 ml.
suspension			
1 min → 6.67%	6.67	4.76	0
5 min → 22.86%	20.95	18.09	0.95
10 min → 28.57%	25.57	23.71	0.95
15 min → 30.48%	26.67	25.71	0.95

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1959

Project No. ~~[illegible]~~ 24032 Date of Work: 07/31/74 Work Performed by: Assulantighian

Title or Purpose: Helman Bearing Profax Continued From: page 1.

	①	②	③	④	⑤
131D	68	68	68	68	68
546	15	15	15	15	15
~~Hel~~ X3220	15	15	15	15	15
PF	2	2	2	2	2
sol. D.D				0.2	0.3
H_2O →	700 ml	500 ml.	400 ml	400 ml.	400 ml.
suspension					
1 min	21.33	23.64	10.87	6.52	2.04
5 —"—	50.67	36.33	23.91	17.39	5.10
10 —"—	—	—	32.61	26.09	8.16
15 —"—	—	—	34.78	28.26	12.24
sticking	yes	yes		yes	slight
ft	14.6 sec.	8.0 sec.		6.9 sec	12.3 sec
moisture Ⓐ	120 gr	115.8		121.3	111.5
Ⓑ	32.2	91.0		32.4	89.9
%				23.83	20.37
g →	0.837	0.884		0.882	0.903
tr. str →	101.13	53.34		110.82 psi	150.22
1400°C →	good				
price →	3.2754 ¢/lb.			3.4106	3.4780
g cu = 0.8765 g/cc production density estimated at ≈ 1.0 g/cc.					
¢/cu in					0.1267

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24072 Date of Work: 08/01/74 Work Performed by: S. Santiglian

Title or Purpose: Paper Prefax Continued From:

	①	②
131D	85	89
267	10	5
177A	3	3
X3584	2	2
sol. D.D	0.3	1
settling		no suspension
1 min	0	
5 min	4	
ft	20.5 sec.	
ρ =	0.76	
Fr. ft.	171	

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24092 Date of Work: 08/08/74 Work Performed by: A. Santighian

Title or Purpose: Asbesta free Profax - Proflex. Continued From:

① The XS1599 has been tried at different form pressures.
30, 40 and 50 p.s.i to see if there is any sticking to the screen in lab's Erdel.
Were produced three pads, no one showing sticking to the screen during forming.

② Due to the Cleveland Plant complaint about suspension on EP 5672, it has been tried at 20% solids content.
EP 5672 floats at that solids content

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1962

Project No. 24092 Date of Work: 08/09/72 Work Performed by: A. Santighian

Title or Purpose: Asbestos Free Profax - Proflex Continued From:

(1) Checking the suspension on XS 1599 B and EP 5669 was found that after 3 hrs the suspension is very good settling rate being 0.
were prounced again two samples that will be left over the weekend to check the suspension. If the settling rate is still 0 then we must try not to agitate the slurry.
That will be a tremendous energy economy for the Co. If Fosecs will understand the problem.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1963

Project No. 24092 Date of Work: 08/12/74 Work Performed by:

Title or Purpose: Continued From:

- XS 1593B has 0 settling rate —
- EP 5669 floated —
XS 1593B.

In ~~EP 1669~~ was replaced 74C with 109

The recipe is:

131D →	48.00
X1790 →	4.00
X3562 →	32.00
109 →	8.00
177A →	1.04
X3579 →	4.00
X3584 →	2.00
X3588 →	0.80
Tol. D.D →	0.16
	100.00

Settling rate

1 min	0%
5 min	0%
10 min	0%
15 min	0%

	30 p.s.i	40 p.s.i	50 p.s.i
t_c =	4.7 sec.	4.4 sec.	4.0 sec.
moisture content % =	—	—	116.2 90.0 22.25%
Tr. str =	127.2 p.s.i ?	227.6 p.s.i.	175.3 p.s.i
1400°C =			
ρ =	0.79 g/cc.	0.79 g/cc.	0.77 g/cc.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24092 Date of Work: 3/12/74 Work Performed by:

Title or Purpose: Continued From:

In ~~X3599B~~ has been replaced 74C with 109 and X3579 with X3578

The recipe is:

131 D	→	48.00
X1790	→	4.00
X3562	→	32.00
109	→	8.00
173A	→	1.04
X3578	→	4.00
X3584	→	2.00
X3588	→	0.80
Sol. B.D	→	0.16
		100.00

settling rate:

1 min

5 min

10 min.

15 min.

30 p.s.i. 40 p.s.i. 50 p.s.i.

ft. =

moisture content

% =

dr. ft =

ρ =

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1965

Project No. 14262 Date of Work: 08/14, 15 & 16/74 Work Performed by: A. Santiglia

Title or Purpose: Asbestos free trial in Chicago Continued From:

08/14/74

EP 5669A

131D →	300
X2286 →	150
X3562 →	250
74C →	100
177A →	13
X3579 →	50
X3584 →	25
X3588 →	40
sol. DD →	5
	923 lbs

— Three batches were produced in an attempt to run #390 tops in Chicago. Failure. The tops fell off with no explaination other than gravity? (sic)

— Two batches were produced and sent to #7 ring machine. The tool #687 (standard) ran properly and have been produced 84 cycles (rings). 84 rings were packed and will be shipped to the steel hill.

Comments: EP 5669A works acceptable on #7 ring machine. No cavitations occurred, cycle time being similar to EP 4651 A or E.

EP 5669A could be used under regular production procedure.

08/15/74

EP 5465A

131D →	600
X1790 →	50
X3562 →	300
74C →	50
177A →	13
X3579 →	38
X3584 →	20
X3588 →	8
sol. DD →	5.5

The tool #376.

Two times two batches were produced and sent to Super G. The ran was smooth no sticking, even boards, cycle time similar to EP 5452A were encountered.

Comments: EP 5465A can be used under regular production procedure.

Continued To: 1080.5 Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14262 Date of Work: Work Performed by:

Title or Purpose: Continued From:

08/16/74

EP5669A has been used on Super G in order to get Proflex. The tool #971 was in use. Two batches performed as well as Plx G2 recipe which was in use before EP5669A The cycle time is slightly lower ~~Time~~ for EP5669A than Plx G type.

Comments: EP5669A is an acceptable recipe for Super G.

General comments. Super G and #7 sino machines can be phase in right away on Non Asbestos non Paper recipes (EP5669A and EP5465A).

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14022 Date of Work: 08/19/74 Work Performed by: B. Bulau and A. Sautiglian

Title or Purpose: 2% Asbestos on Px 31 Type. Continued From:

Px 31

131D →	500
X1790 →	25
177A →	28.5 ?
265A →	19.5 ?
319 →	6.5 ?
447 →	8.0
546 →	70.0
	657.5

has been modified in order to get a Px 31 type recipe with 2% Asbestos.

The customer's new recipe is:

131D →	500
X1790 →	50
177A →	13
X3579 →	38
546 →	70
265A →	10
319 →	3
X3584 →	8
Irl. DD →	1.5
	693.5

The solids content is around 25%

A double batch is more likely

Then:

131D →	1000	72.31
X1790 →	100	7.23
177A →	25	1.81
X3579 →	75	5.42
X3584 →	15	1.08
546 →	140	10.12
265A →	20	1.45
319 →	5	0.36
Irl. DD →	3	0.22
	1383	100.00

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14022 Date of Work: 08/20/74 Work Performed by:

Title or Purpose: Continued From:

The form time : 2.4 - 2.7 - 4.3 sec.

Settling rate :

1 min : 0%

5 min : 420/440 = 4.55%

10 min : 410/440 = 6.82%

15 min : 410/440 = 6.82%

15 hrs : 410/440 = 6.82%

ρ : 0.79 g/cc ; 0.80 g/cc ; 0.77 g/cc.

fr str : 280 p.s.i ; 191 p.s.i ; ?? ; 373 p.s.i ;

shrinkage : 2.5%.

XS1604

Auritec results : 9159 Btu/ft² ; 140 Btu/ft²min ; no flag.
is not acceptable.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1969

Project No. 24032 Date of Work: 08/21/74 Work Performed by: C. Balan and A. Santiglian

Title or Purpose: Continued From:

We have been asked by D.J. Marino to work out a recipe containing Hebuan cationic Fiber. (x

131D →	70.00
x1790 →	7.00
x3220 →	10.00
546 →	5.00
177A →	1.80
x3579 →	5.00
x3584 →	1.20
tol.DD →	0.10
	100.10

H_2O → 350 ml and 300 ml.

settling rate:

1 min → 0%

5 min → 410/430 = 4.65%

10 -"- → 400/430 = 6.98%

Ft → 13.0 sec.

ρ : 0.37 g/cc. Too high

Tr. str : After 400 p.s.i Too high

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1970

Project No. | Date of Work: 08/21/74 | Work Performed by: C. Brisau and A. Fantiglisau

Title or Purpose: | Continued From:

D. J. Marino wants to be run 3 samples (one of each) of Px31C, EP5465A and EP5672 at 1475°C and evaluate them.

- The shrinkage on Px31 was almost 0%
- EP5465A now 8.13% } could be considered as being similar
- EP5672 now 9.09% }

A porosity test was suggested and accepted. Cleveland lab in Shelton CT will run it.

The samples were marked as follows:

(1)	Px31	: 12.5317g / 6.7529g = 46.11%	(1)	142.18%
(2)	EP5672	: 10.8725g / 7.3468g = 32.43%	(2)	100%
(3)	EP5465A	: 12.2625g / 7.8283g = 36.16%	(3)	111.50%

08/23/74

Continued To: | Disclosed To And Understood By Me:

Entered By: | Date:

Date: | Date:

Project No. 14022 Date of Work: 08/21/74 Work Performed by: C. Bulan and A. Santiglican

Title or Purpose: Continued From:

131D →	1000	73.64
X1790 →	75	5.52
177A →	25	1.84
X3579 →	75	5.52
x3584 →	15	1.10
546 →	140	10.31
265A →	20	1.47
319 →	5	0.37
sl.D.D →	3	0.22
	1358	99.99

Because the recipe is very similar to XS1604 we will make a 10 gals batch for Emitec evaluation.

ρ: 1.01 g/cc.

08/25/74

131D →	1000	70.0	70.52
X1790 →	100	7.0	7.05
177A →	25	1.8	1.76
x3579 →	75	5.3	5.29
x3584 →	15	1.1	1.06
546 →	175	12.3	12.34
265A →	20	1.4	1.41
319 →	5	.4	0.35
sl.D.D →	3	.2	0.21
	1428	99.5	99.99

wetting rate: 1 min: 5.71%; 5 min: 8.57%; 10 min: 17.14%; 15 min: 17.14%

ρ: 0.85 g/cc.

1400°C

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24032 Date of Work: 08/22/74 Work Performed by: C. Bulau and A. Santighian

Title or Purpose: Continued From:

131D → 65.00	65.00
x1790 → 7.00	7.00
x3220 → 10.00	10.00
546 → 10.00	10.00
177A → 1.80	1.80
x3579 → 5.00	4.50
x3584 → 1.20	1.20
sol. DD → 0.10	0.15
100.10	—
x3588 →	0.50
H_2O → 350 ml	100.15

settling rate:
1 min : 370/400 =
5 min : 330/400 =
10 min : 310/400 =
15 min : 300/400 =

settling rate:
1 min : 500/500 = 0%
5 min : 500/500 = 0%
10 min : 500/500 = 0%
15 min : 500/500 = 0%
} 400 ml H_2O

ft. = 7.5 sec
no green strength

ft = 8.3 sec.
acceptable green strength

ρ = 0.84
Tr. Str = 330 p.s.i.
shrinkage : 0% at 1400°C.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1973

Project No. 14022 Date of Work: 08/23/74 and 08/26/74 Work Performed by: C. Bulan and A. Santighian

Title or Purpose: Continued From:

131D →	1000	900	66.27	900	66.57
x1790 →	100	100	7.36	100	7.40
177A →	25	25	1.84	25	1.85
x3579 →	75	75	5.52	75	5.55
x3584 →	15	15	1.10	15	1.10
546 →	175	210	15.46	210	15.53
x3588 →	~~30~~	—	—	—	—
sol. D.D →	3	3	0.22	—	0.15
265A →	30	30	2.21	27	2.00
319 →	—	—	—	—	—
	1423	1358		1352	100.15

settling rate: H_2O: 600 ml

1 min : → 1.47%

5 min : → 8.12%

10 min : → 11.76%

15 min : → 11.76%

ft : 4.0 sec

ρ : 0.6723 g/cc.

Tr. str : 25046 p.s.i

1400°C. : 1-2%

A 20 gals. batch will be made for an Smitec pad.

The density of the Smitec pad = 0.77 g/cc.

774 g/pad

price : 4.9726 ¢/lb

0.1387 ¢/cu in.

Smitec results : 7961 Btu/ft²

122 Btu/ft² min

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14[illegible]2 Date of Work: 08/26/74 Work Performed by: A Santighian

Title or Purpose: Continued From:

At R. R. Dzurilla suggestion was tested EP-672 without surfactant:

131D → 53.6
X1790 → 4.5
X3562 → 26.8
74C → 4.5
177A → 1.2
X3579 → 4.5
X3584 → 2.2
X3588 → 0.7
265A → 1.0
319 → 1.0
100.0

settling rate:

1 min: 360/370 = 2.7%
5 min: 330/370 = 10.81%
10 min: 320/370 = 13.51%
15 min: 315/370 = 14.86%
20 min: 315/370 = 14.86%

in 7x31 range. it seems to be acceptable

ft: 4.5 sec

~~[illegible] Amitec results: 796 Btu/ft² [illegible] Btu/ft² [illegible]~~

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1975

Project No. 14412 Date of Work: 08/27/74 Work Performed by: A. Santighian

Title or Purpose: Continued From:

Six samples of "binders for agregate" arrived from "Diamond Shamrock" Chemical Corp".
Three of them were tried in XS1604A as direct replacement for X3579. They are marked A, D and 1310 of M.
X1795

Very low strength. (in 100 p.s.i range)

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 1452 Date of Work: 8/28/74 Work Performed by: A. Sautighian

Title or Purpose: Continued From:

In Chicago for #7 ring machine running EP5669A.
The 24 hrs run in Chicago was not successfull Inc to the sticking to the dryer racks. Also, the rings were too wavy.
Next day, on 08/29/74 was produced one batch at 600 gals level and no sticking to the dryer racks or wavy rings occurred.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1977

Project No. 14252 Date of Work: 09/03/74 Work Performed by: A Santighian & B. Bulan

Title or Purpose: Continued From:

Plant run on Mark IV and #454 1 Pc tops using EP 5669A.

On Mark IV the run was acceptable. (B Bzurilla has the machine ~~setting~~ data.

On 1Pc, after I left, the run was discontinued due to the suspension problem.

2 batches ~~were pr~~ of 20 gals. were produced using different types of fiber glass supplied by the same Company. Was said that the fiber glass can cause lack of suspension.

The two batches made disprove the idea; both slurries having almost the same setting rate

4 Amitec pads were produced and at D.J. having suggestion 2 pads will be finished for Amitec tests.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 74252 Date of Work: 09/04/74 Work Performed by: A. Santighian

Title or Purpose: Continued From:

I was called in by D. J. Marino to take care of EP 5669A on # 4 1Pc machine in order to produce #454 Tops.

The agitator was turned on at 7:35 and after 5 more minutes the machine was started. After the first cycle, wich was scrapped, the machine started to run smooth and no major technical problem encountered.

The tops were acceptable except the flanges which were considered to be too thin.

In spite of thin flanges the tops are handable the flanges have enough strength to handle the tops and the tops fit perfect.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24032 Date of Work: 09/05/74 Work Performed by: C. Bulau & A. Santighian

Title or Purpose: Prefax with Hedman (no wollastonite) Continued From:

A 10 gals batch was calculated and produced today.

The batch was as follows:

131 D →	900	64.26 %	15.00
X1790 →	100	7.14	1.67
X3220 →	150	10.70	2.50
546 →	140	10.00	2.33
177A →	26	1.86	0.43
X3579 →	60	4.26	1.00
X3584 →	16	1.14	0.27
X3588 →	7	0.50	0.12
sol. D D →	2	0.14	0.03
	1401	100.00	23.35 # for 10 gals batch.

600 gals.

~~[illegible]~~. XS1606

8500 Btu/ft²hr

124 Btu/ft² min

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24032 Date of Work: 09/05/74 Work Performed by: A. Santighian & C. Bulan

Title or Purpose: Profax with Heiman & Wollastonite Continued From: XS1605

131D →	600	43.95 %	44.0 %	10.00
x1790 →	100	7.32	7.3	1.67
x3562 →	400	29.30	29.3	6.67
x3220 →	150	11.00	11.0	2.50
177A →	26	1.91	1.9	0.43
x3579 →	60	4.40	4.4	1.00
x3584 →	16	1.17	1.2	0.27
x3588 →	10	0.73	0.7	0.17
sol. D.D →	3	0.22	0.2	0.05
	1365	100.00	100.0	22.76# for 10 gals.
600 gals level.			400 ml H_2O	

suspension 1 min → 0 %
5 —"— → 0 %
10 —"— → 0 %
15 —"— → 0 %

ft. → 10.9 sec
surface → very good
density → 0.73 g/cc.
tr. str. → 273 p.s.i
1400°C shrinkage → 3%

A 10 gals. batch will be made.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24032 Date of Work: 09/06/74 Work Performed by: C. Bulan & A. Santighian

Title or Purpose: Prefax with Hetmanfiber & wollastonite Continued From:

10 gals batch :

131D →	10#
x1790 →	1.67
x3562 →	6.67
x3220 →	2.50
177A →	0.43
x3579 →	1.00
x3584 →	0.27
x3588 →	0.17
sol. DD →	0.05
	22.76#

4 pads were produced and cured at 400°F for 2 hrs.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14282 Date of Work: 09/05-06/74 Work Performed by: C. Bulan & A. Santiglia

Title or Purpose: Profax 10 pads for Smitec Continued From:

A 40 gals batch was made following R. R. Dzurik instructions at D. J. Morino's request
16 pads were produced and curred.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1983

Project No. 14102 Date of Work: 09/09/74 Work Performed by: A. Santiglian

Title or Purpose: Continued From:

Antifoam 60 made by General Electric was tried. The used recipe was EP 5672:

131D →	53.57	53.6	53.6	
X1790 →	4.47	4.5	4.5	58.1
X3562 →	26.79	26.8	26.8	84.9
74C →	4.47	4.5	4.5	89.4
177A →	1.16	1.2	1.2	90.6
X3579 →	4.46	4.5	4.5	95.1
X3584 →	2.23	2.2	2.2	97.3
X3588 →	0.71	0.7	0.7	98.0
Sol. DD →	0.18	0.2	0.4	98.4
265A →	0.98	1.0	1.0	99.4
319 →	0.98	1.0	1.0	100.4
	100.00	100.2		

Antifoam 60 has 30 Drops/gr.
Have been used 5 Drops/100 grs material as described above and the Antifoam 60 killed the foam right away Also, has been tried more sol. D.D upto almost 1 gr. 3 Drops of Antifoam 60 killed the foam without any suspension disturbancy.
The material seems to be acceptable, after regular material is tried in the same conditions.

The material (Antifoam 60) is 4-5 times more efficient than Dow Chemical's B.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1984

Project No. 14472 Date of Work: 09/12-13/74 Work Performed by: A. Santighian

Title or Purpose: Continued From:

binders for agregates supplied by "Diamond Shamrock Chem Corp."

The recipe to be use is XS1604A.

131D → 66.6
X1790 → 7.4
177A → 1.9
X3579 → 5.6 → being replaced by the above binders
X3584 → 1.1
546 → 15.5
265A → 2.0
sol. D.D → 0.1
100.2

6 (six) pads were made to reproduce the former tests. Were followed, strictly, the Diamond Shamrock chem. corp. instructions. The pads were soft, transverse strength being around 100 p.s.i.

Conclusions: The above binders are not working on slurry technique.

AS

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14282 Date of Work: 09/13/74 Work Performed by: R. Walsh & A. Santighian

Title or Purpose: Continued From:

Two 10 gals batches were produced on EP 5672 and EP 5465A. In order to get Amitec pads for a 1500°C test or 6hrs test at 1400°C.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24042 Date of Work: 09/16/74 Work Performed by: C. Bulan & A. Santighian

Title or Purpose: Hedman Proflex without x3562 Continued From:

	①	②	③ ①	④ ②
1317 →	66.96	65.18	38.80	41.62
x1790 →	7.44	9.31	—	—
x2286 →	—	—	29.10	31.22
x3220 →	11.16	13.97	14.55	15.61
177A →	1.93	2.42	1.26	1.35
x3579 →	2.98	3.72	3.88	4.16
x3584 →	0.97	1.21	1.26	1.35
546 →	5.21	—	6.79	—
x3588 →	2.98	3.72	3.88	4.16
sol. DD. →	0.37	0.47	0.48	0.52
f.t →	too high	too high	8 sec.	17 sec
g →	—	—	0.57	0.60
140°C →	—	—		
tr. str →	—	—	273.7	209.0

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1987

Project No. 14122 Date of Work: 09/17/74 Work Performed by: C. Bulay & A. Santiglisan

Title or Purpose: Continued From:

At. R.R. Izquillo request we started working on EP 5482 and EP 5676A in order to establish the orquad and water level admissible to a mixture of 55.56% EP 5676A and 44.44% of EP 5482. The recipe is:

1313 → 80.43	80.4
177A → 1.29	1.3
2655A → 5.14	5.1
319 → 1.44	1.4
546 → 2.70	2.7
x1281 → 0.28	0.3
x2286 → 3.68	3.7
x2289 → 2.94	2.9
x2782 → 1.20	1.2
x3578 → 2.56	2.6
101.66	101.6

Have been used: x1281: 0%, 0.3%, 0.4%, 0.5%, 0.6% and 1.0% and.
water: 500 ml, 600 ml, 700 ml and 800 ml.
The results are:

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1988

Project No. 214122 Date of Work: 09/17-18/74 Work Performed by: C. Poulos & A. Santiguian

Title or Purpose: Continued From:

× 1281 and 500 mL H_2O

	0%	0.3%	0.4%	0.5%	0.6%	1%
sett. rate						
1 min	1.78	1.78	1.78	1.79	1.72	floated
5 min	5.45	7.27	9.19	14.29	8.62	
10 min	10.89	10.91	14.55	19.64	12.07	
15 min.	10.78	11.78	16.36	21.43	13.79	
ft	5.2 sec	7.4 sec.	8.9 sec.	10.0 sec	21.0	250.0
moisture retention	23.64%	21.17%	22.03%		36.24%	

600 mL H_2O

1 min	4.62	1.52
5 min	15.38	15.15
10 min	19.23	21.21
15 min	20.00	24.24
ft	8.4 sec.	16.5

700 mL H_2O

1 min	4.00	5.19
5 min	14.00	14.29
10 min	18.67	22.08
15 min	21.33	27.27
ft.	16.3 sec.	26.8 sec.

800 mL H_2O

1 min	4.07
5 min	16.28
10 min	22.09
15 min.	24.42
ft.	10.7 sec.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1989

Project No. 2.14122 Date of Work: 09/17-18/74 Work Performed by: C. Bulau & A. Sauter

Title or Purpose: Continued From:

Two samples of the Premix recipe (55.56% EP 1676A and 54.44% EP 1482) were made and left on the Lintberg over in order to prove the aging effect of X1289. After 24 hrs one of them was prepared as slurry and the results are:

Settling rate:

1 min	1.82
5 min	9.09
10 min	14.55
15 min	14.55

The settling rate does not show, after 24 hrs, any aging effect. R.R.J wants at least two weeks period.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

FOSECO, INC.

ERENCE NO. _____ **LABORATORY REPORT** SAMPLE NO. M-5701 OF _____ CONTAINER

RAW MATERIAL QUALITY CONTROL

MPLE-ORDER NO. _____ DATE RECEIVED 9/13/74

MPLE TYPE #1549-103 DATE REPORTED _____

M NO. Possible X-3579 SOURCE National Starch & Chemical

ATT: A. Santighian (DJR)

ISTRIBUTION: F.E. A.C.L. F.S.B. J.W.W. R.W.R. A.F.E. LAB.

CHEMICAL ANALYSIS			SIEVE ANALYSIS		
COMPONENT	SPECIFICATION	PERCENT	SCREEN	SPECIFICATION	PERCENT
PURITY					
MOISTURE					
LOSS ON IGNITION					
LOSS ON FUSION					
SOLUBILITY					
WEIGHT/GALLON					
DENSITY			PAN		
SPECIFIC GRAVITY °F			COMMENTS:		
BULK DENSITY			Can be used at 10%		
APPEARANCE			higher rate than regular		
SUPPLIER'S CERTIFICATION			X3579.		
COLOR					

Assistant Lab
09/19/74

PURCHASE ORDER NO. _____

DATE RECEIVED _____

WEIGHT _____

PARTIALY SATISFACTORY

UNSATISFACTORY

ANALYST _____

ANALYST _____

SIGNED BY _____

1991

Project No. ?14132 Date of Work: 09/19/74 Work Performed by: A. Santos

Title or Purpose: Continued From:

A possible X3579 replacement from National Starch & Chemical was received and it will be used as direct replacement on EP 5672, or XS1604A.

XS 1604 A

131D →	66.6
X1790 →	7.4
177A →	1.9
X3579 →	5.6
X3584 →	1.1
546 →	15.5
265A →	2.0
sol. DD →	0.1
	100.2

ft →	6.7 sec.	5.8 sec	5.3 sec.	17.8 ÷ 3 = 5.93 sec
moisture retention →	29.13%	26.76%	25.85%	81.74 ÷ 3 = 27.25%
tr. str →	183.27 psi	187.0	245.0	615.0 ÷ 3 = 205.0
density →	0.63 g/cc	0.66 g/cc	0.67 g/cc	196. ÷ 3 = 0.65 g/cc

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 214142 Date of Work: 09/23-24-25/74 Work Performed by: A. Lautigliano

Title or Purpose: Continued From:

At D.J. Marino suggestion we tried ~~to~~ replacing 131D by a coarser silica. (Has been tried only 00E which was available).
~~The results are~~ The recipe was designated as Px 31 D and the results are:

	Px 31 B	Px 31 B_1	Px 31 B.	Px 31 B_2	Px 31 B_3
00E →	75.5	40.0.	—	35.5	20.0
131D →	—	35.5	75.5	40.0	55.5
177A →	4.4	4.4	4.4	4.4	4.4
265A →	3.0	3.0	3.0	3.0	3.0
319 →	1.1	1.1	1.1	1.1	1.1
546 →	10.6	10.6	10.6	10.6	10.6
X1790 →	3.8	3.8	3.8	3.8	3.8
X3584 →	1.7	1.7	1.7	1.7	1.7
ft →	1.5 sec.	2.0 sec	9.7 sec		
settling 1 min	floated	floated	floated		
Using double batch					
settling					
1 min	0	0	—	0	0
5 —	0	0	—	0	0
10 —	0	0	—	0	0
15 —	0	0	—	0	0
ft →	1.7	2.0 sec	—	2.3 sec.	2.9 sec.

An Emitec pad should be made:

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1993

Project No. 214282 Date of Work: 09/25/74 Work Performed by: C. Bulan & A. Santighian

Title or Purpose: Continued From:

A 20 gals batch of Px31D is as follows:

131D →	29.17	14.58
00E →	12.50	6.24
177A →	2.42	1.21
265A →	1.67	0.83
319 →	0.58	0.29
546 →	5.83	2.92
X1790 →	2.09	1.04
X3584 →	0.92	0.46
	55.17	27.58

Two 10 gals batches were made: EP 5669A and EP 5669A + 2% 265A for an Smitte evaluation

	D_3	D_2	
density:	0.80 g/cc.	0.73 g/cc.	for Px31 B modified
tr. str.:	290 p.s.i.	265 p.s.i.	

	EP 5669A 2%	EP 5669A
density:	0.542 g/cc	0.55
tr. str.:	160 p.s.i	140.2 p.s.i.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1994

Project No. 2 Date of Work: 09/25/74 Work Performed by: A. Santiglia

Title or Purpose: Profex with 2% asbestos Continued From:

see previous page

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 214152 Date of Work: 10/01/74 Work Performed by: A Santighian

Title or Purpose: Px 31 C with different amount of ~~continued from~~

B. J. Marino asked for the above project in order to improve the machines productivity.

The combinations used are:

	Px31 C		Px 31 C5		Px31 C4		Px31 C3		Px 31 C2		Px31 C1	
131D	500	73.5	400	58.8	300	44.1	200	29.4	100	14.7	—	—
00E	—	—	100	14.7	200	29.4	300	44.4	400	58.8	500	73.5
x1790	25	3.7	25	3.7	25	3.7	25	3.7	25	3.7	25	3.7
177A	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3
x3579	40	5.9	40	5.9	40	5.9	40	5.9	40	5.9	40	5.9
x3584	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3
265A	20	2.9	20	2.9	20	2.9	20	2.9	20	2.9	20	2.9
319	7	1.0	7	1.0	7	1.0	7	1.0	7	1.0	7	1.0
546	70	10.3	70	10.3	70	10.3	70	10.3	70	10.3	70	10.3

sett.						
1 min	7.41%	8.15	are not accurate			
5	12.59	12.59				
10	20.00	25.93		idem	idem	idem
15	24.44	27.41				
~~ft~~	11.2 sec	6.3		severe	very severe	idem
obs	very slight sep.	slight sep.	separation	separation	separation	
ft	11.2	6.3	4.2	3.5	2.7	2.2
H_2O retention						
	86.9	86.9	84.2	85.8	82.9	85.5
	128.5	113.9	110.2	110.4	105.9	111.3
	32.37	23.71	23.59	22.23	21.72	23.18
		6 gals.				

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 214162 Date of Work: 10/01/74 Work Performed by: A. Santighian

Title or Purpose: Px10 with 00E Continued From:

D.J. Marino asked for it. (see page 39)

	Px10		Px10₁		Px10₂		Px10₃		Px10₄		Px10₅		Px10₆	
131D	600	88.1	500	73.4	400	58.7	300	44.0	200	29.4	100	14.7	—	—
00E	—	—	100	14.7	200	29.4	300	44.1	400	58.7	500	73.4	600	88.1
177A	14	2.1	14	2.1	14	2.1	14	2.1	14	2.1	14	2.1	14	2.1
265A	12	1.8	12	1.8	12	1.8	12	1.8	12	1.8	12	1.8	12	1.8
267	44	6.5	44	6.5	44	6.5	44	6.5	44	6.5	44	6.5	44	6.5
x3584	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3	9	1.3
x1281	2	0.3	—	—	—	—	—	—	—	—	—	—	—	—
Sol. DD	—		1	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	0.2

x1281 has been replaced by sol. DD at 1:0.5 ratio

Settling							
1	1.82	5.45	3.64	5.45	7.27	7.27	7.27
5	9.19	12.73	9.09	14.55	21.82	14.50	16.36
10	18.18	18.18	10.91	21.82	23.64	20.00	21.82
15	18.18	18.18	12.73	23.64	25.45	23.64	21.82
ft	8.8	7.8	7.4	5.9	5.2	4.1	4.0
H₂O ret.	120.4	118.0 129.0	121.7	120.7	116.5	118.5	117.2
	91.9	90.5 92.7	92.6	92.1	92.3	92.5	92.1
	23.67%	23.31; 28.14	23.91	23.65	20.77	21.94	21.42
		10 gals	10 gals				

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14772 Date of Work: 10/02/74 Work Performed by: A. Santiglian

Title or Purpose: EP5476 with OOP Continued From:

D J Marino asked for it. (see page 39)

	EP5476		EP5476₁		EP5476₂		EP5476₃		EP5476₄		EP5476₅	
OOP	200	28.9	300	43.4	400	57.8	500	72.3	600	86.7	100	14.4
131D	400	57.8	300	43.3	200	28.9	100	14.4	—	—	500	72.3
177A	21	3.0	21	3.0	21	3.0	21	3.0	21	3.0	21	3.0
265A	12	1.7	12	1.7	12	1.7	12	1.7	12	1.7	12	1.7
267	48	6.9	48	6.9	48	6.9	48	6.9	48	6.9	48	6.9
X3584	11	1.6	11	1.6	11	1.6	11	1.6	11	1.6	11	1.6
settling												
1	590/580		590/580		590/580		590/580		590/590		590/590	
5	590/580		very slight		very slight		slight		slight		590/590	
10	590/580		separation		separation		separation		separation		590/590	
15	590/580										590/590	
ft.	11.0		9.0		6.2		4.6		3.9		12.0	
H_2O	91.6		92.7		91.1		90.4		91.2		89.9	
	120.0		128.7		124.7		121.1		123.6		124.6	
	29.54%		27.98%		26.95%		25.35%		26.21%		27.85%	
			10 gals								10 gals	

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

1998

Project No. 14252 2 ~~10/03/74~~ Date of Work: 10/03/74 Work Performed by: C. Bulau & A. Santighia

Title or Purpose: Continued From:

A experimental run was scheduled on K4 using EP 5672 without 74C.
After two batches D.J. having ordered the usage of 74C on next batches and I suggested a decreased in sol. D.D. usage.
The EP 5672 (modified) worked acceptable.
One out of four boards (#3 Tool) had a oblique hole which started at the left sprouble and ended at the far left ledge. After the Tool was patched up, the Tool started working properly and all the boards were 100% acceptable.
The machine setting was as follows:

	7x31B	EP 5672
form time:	30 sec	24-28 sec. (16-17 sec)
form pressure:	36 p.s.i. (26)	36 p.s.i (26)
[illegible]	0	0
rewatering time:	20 sec	28 sec (20 sec)
rewatering pres:	75 p.s.i. (65 p.s.i)	50 p.s.i (45)

The boards fit well and 2 pallets were packed and will be shipped on Monday Oct. 07/74.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14302 Date of Work: 11/24/74 Work Performed by: P. Kugnayn A. Santighian

Title or Purpose: Continued From:

Burn-out tests for EP5465+2% paper and EP5465F were ran today. The results are:

	EP5465A 2% paper	EP5465F
temp:	550°F	550°F
time:	~~[illegible]~~:	~~[illegible]~~
15 min.	79.98	128.45
30 min	71.66	31.24
45 min	78.25	46.02
60 min.	78.97	33.82

In parallel with "Flying Scott" the vacuum tool was used in order to establish paralelism between "Flying Scott" and "Vacuum" made pads.

The densities and transverse strength are: (vacuum tool)

EP5465A → tr. str: 406.2 ; $\rho = 0.601$ (vacuum tool)
tr. str: 290.0 ; $\rho = 0.724$ (Flying Scott)

EP5465+ 2% paper → tr. str: 397.1 ; $\rho = 0.575$ (vacuum tool)
tr. str: 294.8 ; $\rho = 0.634$ (Flying Scott)

EP5465F → tr. str: 273.5 ; $\rho = 0.533$ (vacuum tool)
tr. str: 378.2 ; $\rho = 0.633$ (Flying Scott)

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14252 Date of Work: 10/09/74 Work Performed by: A. Smith

Title or Purpose: Continued From:

Initial usage of EP5672 started today on K4 machine.
The machine setting finaly was:
form time : 16-17 sec
form pressure: 36 (26) p.s.i
66 : 0
Dewatering time: 20 sec
Dewatering pres: 50-55 p.s.i (45-50)
The K4 machine runs as usual with no major problems.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2000

Project No. 24182 Date of Work: 10/10/74 Work Performed by: A. Santighian

Title or Purpose: Kalminex Continued From: —

Don Lawnsee wants a official recipe for EP 4600D

The recipe is:

(4)

422G	→	370	56.47%
X3584	→	13½	2.06
172A	→	30¼	4.62
13C	→	40½	6.18
282D	→	33½	5.11
265A	→	40¼	6.14
267	→	20¼	3.09
X3562	→	100	15.26
182	→	7	1.07
		656¼	

Laboratory performances are:

form time : 9 sec.

pressure drop : 30 – 25

settling rate : 10% after 15 min.

cost : ¢/lb : 12.7333 ¢/lb

solids content : 10.09%

H_2O retention : 33.04%

In order to easy up the above recipe (to make it workable in industrial conditions) we tried to change it to even lbs all over. Also 422R was used in order to make it less expensive

The recipes are:

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. ? 24182 Date of Work: 10/10/11/74 Work Performed by: A. Lautigliano

Title or Purpose: Kalunite without asbestos Continued From: page 44.

	(E)	(1)		(2)		(3)		(5)	
422 R →	370	56.5	500	56.82	500	58.82	~~500~~	~~56.82~~	
422 G →	—	—	—	—	—	—	500	56.82	
X3562 →	100	15.3	150	17.05	150	17.65	150	17.05	
13C →	41	6.2 ✓	40	4.55	40	4.71	40	4.55	
2820 →	34	5.1	50	5.69	50	5.88	50	5.69	
177A →	30	4.6	13	1.48	13	1.53	13	1.48	
X3579 →	—	—	40	4.50	40	4.71	40	4.50	
X3584 →	14	2.1	20	2.28	20	2.35	20	2.28	
265A →	40	6.1	—	—	—	—	—	—	
267 →	90	3.1	60	6.82	30	3.53	60	6.82	
182 →	7	1.1	7	0.80	7	0.82	7	0.80	
							880		
Horn time:	6.9 sec.		6.2 sec.		6.7		6.2 sec.		
pressure drop:	30-24 ~~psi~~		30-24		30-24		30-24		
settling rate:	10% - 1 5 min		8-10% 1 5 min		30% 1 5 min		8-10% 1 5 min		
H2O retention:	30.53%		33.94%		27.55%		36.84%		
ml H2O used:	800		500		500		500		
recipe cost							6.0247 ¢/lb		
							~~850~~ 880 Btu/ft²hr		

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2002

Project No. ? 14192 Date of Work: 10/14/74 Work Performed by: A. Santighian

Title or Purpose: The lowest solids content admissible on EP 5672 and EP 5465A Continued From:

	EP 5672	EP 5465A
131D →	53.6	55.5
x1790 →	4.5	4.6
x3562 →	26.8	27.8
74C →	4.5	4.6
177A →	1.2	1.2
x3579 →	4.5	3.5
x3584 →	2.2	1.9
x3588 →	0.7	0.7
265A →	1.0	—
319 →	1.0	—
sol. DD →	0.1	0.1
	100.1	99.9

Have been tried 300, 400 and 500 ml.

The settling rates are:

	300 ml.		300 ml.		
1 min :	0%		5%.		450 gals level
5 min :	3%	25%	11%	25%	
10 min :	—		13%		
15 min :	8%		13%		
	400 ml		400 ml.		
1 min :	4%		4%		530 gals level.
5 mins :	9%	20%	13%	20%	
10 " :	11%		17%		
15 " :	11%		20%		
	500 ml		500 ml		
floated		17%	floated	17%.	655 gals level.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14202 2 Date of Work: 10/14/74 Work Performed by: A. Santiglian

Title or Purpose: M 5715 (replacement of 177A) Continued From:

3 pads of Px31 B were worked out using M5715 as replacement of RM 177A.

The results are:

① ft: 6.5 sec tr. str. : 265.7 ; ρ : 0.75 ; moisture retention : 94.2/121.6

② ft: 7.1 sec. tr. str. : 294.1 ; ρ : 0.72 ; — — : 93.4/121.7 : 2

③ ft: 6.5 sec tr. str : 317.4 ; ρ : 0.77 ; — — , 94.0/120.3 : 2

$\frac{877.2}{3} = 292.4$ $\frac{2.24}{3} = 0.75$ g/cc.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2004

Project No. 24182 e Date of Work: 10/15/74 Work Performed by: A. Santiglia

Title or Purpose: Kalunex asbestos free Continued From: page 44.

EP 4600 D was tried against the new asbestos free paper bearing recipe in order to establish the forming characteristics. EP 4600 D was tried against #1 recipe from page 45.

The forming characteristics are alike.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14282 Date of Work: 10/16/74 Work Performed by: A. Santighian Paul Kuzniyn

Title or Purpose: Kalminex asbestos free. Continued From: page 44.

A 10 gals batch was made using the recipe #5 from page 45. The suspension characteristics are acceptable (12% settling after 1/2 hr). The five pads series were curred for 3 hrs at 400°F. The form time varied between 5-10 seconds inc to the amount of slurry poured into the „Flying Scott". The pressure was set 40 p.s.i. Dewatering time was set at 1 min. The boards have had good handability in green stage.

The boards have: $\rho = 0.57$ g/cc

tr. str = 206.1 p.s.i

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2006

Project No. 24032 Date of Work: 10/17/74 Work Performed by: Paul Kuznyn & A. Santiglian

Title or Purpose: Profax with Hedman Continued From: 24

10 gals batch was repeated in order to get a Amitex pad and green strength determination.

The results are:

g = 0.654 g/cc ; tr. strength: 416.6 p.s.i.

firm time: 10 sec

dewatering time: 50 sec pressure drop: 5 p.s.i (40-35)

the green strength figures are:

60 sec : 1" 3/4

120 sec : 2"

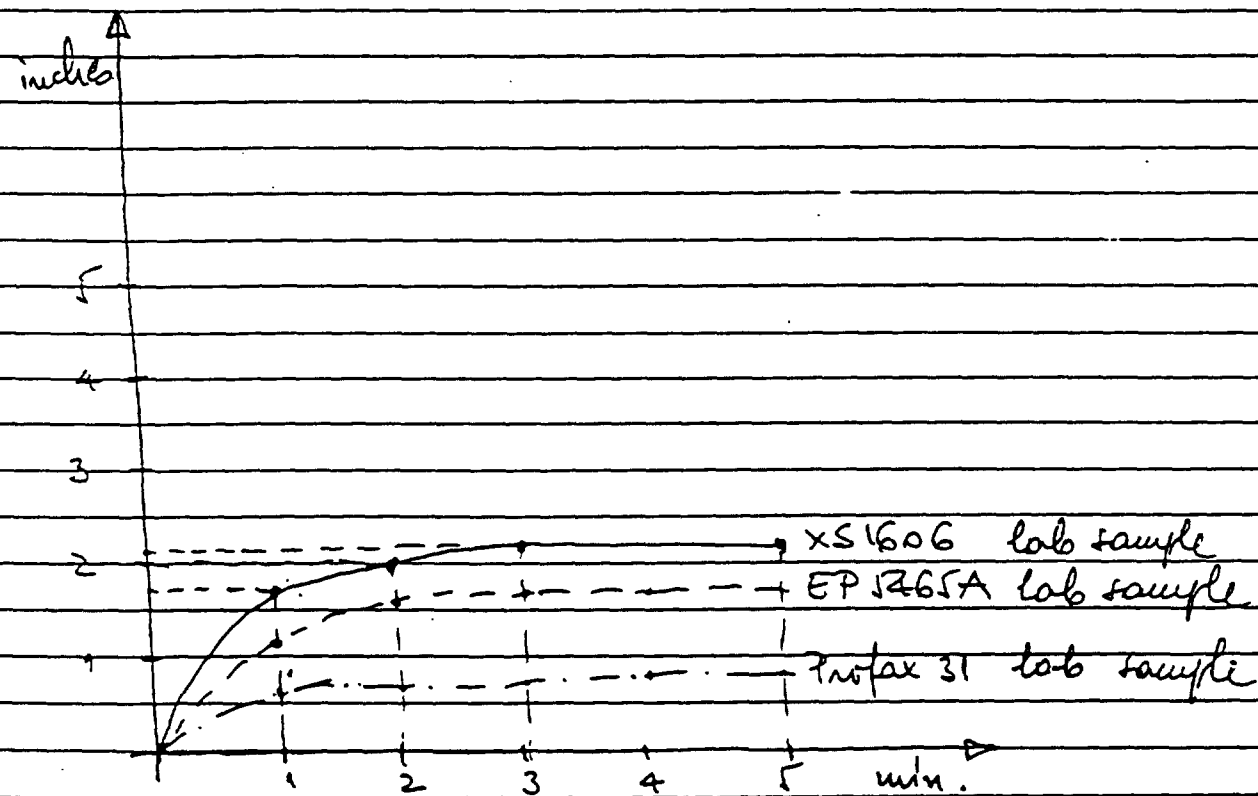
180 " : 2" 1/8

240 sec : 2" 1/8

300 sec : 2" 1/8

the pressure used for vibrator was kept constant at 50 p.s.i.

5" slump at bottom



Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

	①		②		③	
00E →	41	41	—	—	—	—
00P →	—	—	41.0	—	—	—
131D →	50	91	50.0	91.0	91.0	—
267 →	5.5	96.5	5.5	96.5	5.5	96.5
x2816(x3578)	3.0	99.5	3.0	99.5	3.0	99.5
x2846(x1281)	0.5	100.0	0.5	100.0	0.5	100.0
	100.0		100.0		100.0	

settling 530/430
530/330
530/300
530/290

ft → 8.5 sec.

p.d → 30-28 p.s.i.

separation

$\frac{116.2}{91.8}$ =

① 330/320
330/300
330/280
330/270

40 sec
30-28
very, very lip

$\frac{112.2}{88.6}$

② 530/440
530/350
530/310
530/300

7.25

$\frac{113.2}{90s}$ 30-28

separation

② 440/410
440/330
440/300
440/280

6.4
30-28
very slight lip

$\frac{116.5}{91.1}$

③ 365/350
365/330
365/300
365/290

24.0
30-30

$\frac{143.4}{91.6}$

	①	
131 D →	81.7	—
546 →	7.0	88.7
177A →	3.5	92.2
X3552 →	6.5	98.7
X1281 →	0.3	99.0
117 →	1.0	100.0
	100.0	

Project No. R4212 Date of Work: 10/18/74 Work Performed by: A Santighian

Title or Purpose: Asbestos free (The German recipe) Continued From:

	①		②	③
OOE →	41	—	—	—
OOP →	—	—	41.0	—
131D →	50	—	50.0	91.0
267 →	5.5	—	5.5	5.5
X3578 →	3.0	—	3.0	3.0
X1281 →	0.5	—	0.5	0.5
	100.0	—	100.0	100.0

H_2O retention: 500 ml pads: ① 21% ② 20.49%
400 ml pads: ㉑ 21.80%
300 ml pads: ⑪ 21.03% ③ 36.12%

settling rate: 500 ml of H_2O

1 min	18.87%	17.92	—
5 min	37.74%	33.96	—
10 min	43.40%	41.51	—
15 min	45.28%	43.40	—

400 ml of H_2O

	—	6.82	—
	—	25.00	—
	—	31.82	—
	—	36.36	—

300 ml of H_2O

	3.03	—	4.11
	9.09	—	9.59
	15.15	—	17.81
	18.18	—	20.55
ft: 500 ml	8.5 sec	7.2 sec	} separation
p.d.:	30-28	30-28	
ft: 400 ml		6.4 sec	
p.d.:		30-28	
ft: 300 ml	4.0 sec.		24.0 very slight separation

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14252 ? Date of Work: 10/21-25/74 Work Performed by: A. Santighian

Title or Purpose: R_1 using EP 5669A Continued From:

At Dr Phoenix request I went to Sheldon R's and tried to use EP 5669A on R_1 machine.

The problems with the machine were:

1. Leaks at the bottom seal (male and female tool)
2. Leaks at the top seal (male and female tool)
3. Leaks at the ~~bottom~~ out-side bottom ~~tool~~ portion

1 and 2 were corrected following Brian Gooden's and FitzGerald's suggestions

During 4 (four) days trials we tried (I was assisted in many ways by FitzGerald) different methods to get read of cavitations.

Finaly (Friday) I did produce 4 (four) fair rings which have cavitation only on one ~~[illegible]~~ portion probably due to the machine misaligument and/or leak.

The only change during the operation was:

1. During fill up process both agitation and lower vacuum switches were on.

The resulted material is ~~[illegible]~~ very well hadable, a little too hard. The density (1 sample) = 0.51 g/cc.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2011

Project No. 14262 2 1 Date of Work: 10/28/74 Work Performed by: A. Santigliano

Title or Purpose: EP 5298 at #7 slug machine Continued from Chicago

Thursday 10/31/74 is scheduled a run in Chicago in order to accumulate EP 5298 to #7 slug machine. 3 samples were produced in order to find out the right solids content level, ~~setting~~ settling rate ~~and~~, drum time etc. The used recipe was:

	(1)	(1)	(2)	(3)
131A → 200	50.25	50.3	50.3	25.7
X2286 → 100	25.13	25.1	25.1	12.6
X3562 → 50	12.56	12.6	12.6	6.3
177A → 6	1.51	1.5	1.5	0.8
X3588 → 24	6.03	6.0	6.0	3.0
267 → 16	4.02	4.0	4.0	2.0
X1281 → 2	0.50	0.5	0.75	0.5
1 min →		2.08%	0	0
5 min →		8.33	2.11	3.70
10 min →		13.54	5.26	3.70
15 min →		14.56	7.37	3.70
ft →		7.3	9.2	3.5
% retention		37.63	37.21	32.64

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2012

D. J. Marino

Arsen Santighian

November 4, 1974

EP 5298 on #7 ring machine in Chicago

EP 5298 (paper bearing Proflex type asbestos free) was tried on #7 ring machine. One batch was pulped making slight modification to the pulping procedure. So, EM 267 and EM 131D (with bags) were pulped for almost 9-10 minutes in 300 gallons of water and without turning off the pulper, the remaining materials were poured. The timer was set at 15 minutes and after that time the slurry was acceptable. The run was smooth and no technical problems occurred during the trial. The cycle time (70-75 sec) is similar to the standard recipe (EP 4651 type). The tool employed was #376 (USS Lorain) and 15 rings were produced, (a small sample of the obtained ring is in our lab). Next week (Wednesday and/or Thursday) J. S. Vhr wants to try running the machine for at least two shifts.

AS/lr

Project No. 14262 2 Date of Work: 10/31/74 Work Performed by: A. Sautighian

Title or Purpose: Continued From:

A run was started on #7 ring machine in Chicago, using EP 5298.
The resulted rings were acceptable, no technical problems were encountered.
The cycle time was similar to the standard recipe or 70-75 sec.
The rings presented slight cavitations but in a very acceptable range.
The rings are bumpable. The density (one sample) was 0.45 g/cc and the transverse strength 110 p.s.i.
J. Virk wants to try two consecutive shifts using EP 5298. The resulted rings (10) were shipped to U.S.S Lecoutre.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2014

Price Following:

ETHYLEX 2030 — $15.23 Cwt. in bags FOB Decatur

ETHYLEX 2095 — $14.23 Cwt. in bags "

FT-187 — $19.50 Cwt in bags "

STA-DEX 125 — $16.81 Cwt. in bags "

Waxy #1 — $20.36 Cwt. in bags F.O.B. Indianapolis

Project.No. 14222? Date of Work: 11/04/74 Work Performed by: A. Santiglian

Title or Purpose: Continued From:

A. Staley Mfg. Co. Request. Dist. Stain Studies in EP 572.
Three dried 10-2 recipes were written as follows:

	EP 572	(1)	(2)	(3)	
1310 →	53.6	53.6	53.6	53.6	53.6
x1730 →	4.5	4.5	4.5	4.5	4.5
x3562 →	26.8	26.8	26.8	26.8	26.8
740 →	4.5	4.5	4.5	4.5	4.5
177A →	1.2	1.2	—	—	—
x3579 →	4.5	—	—	—	—
x3578 →	—	4.5	5.7	4.5	4.5
x3584 →	2.2	2.2	2.2	2.2	—
Dextrin →	—	—	—	—	2.2
x3588 →	0.7	0.7	0.7	0.7	0.7
265A →	1.0	1.0	1.0	1.0	1.0
319 →	1.0	1.0	1.0	1.0	1.0
Ant. DD →	0.1	0.1	0.1	0.1	0.1
16 gm.					
ft → F_4-187		14.0	12.3	—	—
3030		14.3	13.9	—	—
3095		12.8	13.2	—	—
WAXY		13.2	14.2	—	—
AMIOCA		13.7	—	—	—
H2O titration F_4-187		25.73	26.16	26.22	—
3030		25.61	25.73	26.80	—
3095		25.00	25.92	26.67	—
WAXY		26.14	26.06	26.12	—
AMIOCA		25.43	—	—	—
F_4-187 ρ		0.71	0.78	0.79	
3095		0.69	0.78	0.81	
3030		0.69	0.76	0.79	
WAXY		0.66	0.78	0.76	
AMIOCA		0.690			

A staining pat was pulled over the units & are:
ρ = 0.654
$\frac{1}{D_n \cdot D_v}$ = 374

Continued To: F_4-187	498	417	426	Disclosed To And Understood By Me:
Entered By: 3095	473	498	428	Date:
Date: 3030	494	511	553	Date:
WAXY	412	444	422	
AMIOCA	490	—	—	

2016

$\text{standard} = \frac{\quad}{0.83 \times 0.59^2} = 374.0 \quad \rho = \frac{\quad}{97.0 + 4.9} = 0$

(1)

AMIOCA	$\text{tr. str} = \frac{4.5 \times 35.0}{0.81 \times 0.63^2} = 490$	$\rho = \frac{13.6 \times 7.0}{129.0 + 7.0} = 0.7$
F4-187	$= \frac{4.5 \times 30.5}{0.765 \times 0.6^2} = 498$	$\rho = \frac{13.6 \times 6.6}{120.0 + 6.6} = 0.71$
3095	$= \frac{4.5 \times 34.5}{0.83 \times 0.628^2} = 473$	$\rho = \frac{13.6 \times 6.9}{130.0 + 6.9} = 0.69$
3030	$= \frac{4.5 \times 35.5}{0.79 \times 0.64^2} = 494$	$\rho = \frac{13.6 \times 6.8}{127.0 + 6.8} = 0.69$
WAXY	$= \frac{4.5 \times 29.0}{0.825 \times 0.62^2} = 412$	$\rho = \frac{13.6 \times 6.4}{125.0 + 6.4} = 0.66$

(2)

F4-187	$= \frac{4.5 \times 29.5}{0.885 \times 0.6^2} = 417$	$\rho = \frac{13.6 \times 8.3}{137.0 + 8.3} = 0.78$
3095	$= \frac{4.5 \times 35.5}{0.835 \times 0.62^2} = 498$	$\rho = \frac{13.6 \times 8.6}{141.0 + 8.6} =$
3030	$= \frac{4.5 \times 36.5}{0.85 \times 0.615^2} = 511$	$\rho = \frac{13.6 \times 6.9}{117.0 + 6.9} =$
WAXY	$= \frac{4.5 \times 30.5}{0.805 \times 0.620^2} = 444$	$\rho = \frac{13.6 \times 7.5}{124.0 + 7.5} =$

(3)

F4-187	$= \frac{4.5 \times 27.0}{0.793 \times 0.6^2} = 426$	$\rho = \frac{13.6 \times 8.6}{138.0 + 8.6} = 0.79$
3095	$= \frac{4.5 \times 25.5}{0.84 \times 0.565^2} = 428$	$\rho = \frac{13.6 \times 7.5}{118.0 + 7.5} = 0.81$
3030	$= \frac{4.5 \times 35.5}{0.83 \times 0.59^2} = 553$	$\rho = \frac{13.6 \times 7.5}{122.0 + 7.5} = 0.79$
WAXY	$= \frac{4.5 \times 33.5}{0.9 \times 0.63^2} = 422$	$\rho = \frac{13.6 \times 7.5}{127.0 + 7.5} = 0.76$

(4)

F4-187	$= \frac{4.5 \times 30.5}{0.796 \times 0.625^2} = 441$	$\rho = \frac{13.6 \times 7.5}{131.0 + 7.5} = 0.74$
3095	$= \frac{4.5 \times 37.5}{0.79 \times 0.65^2} = 506$	$\rho = \frac{13.6 \times 7.9}{134.0 + 7.9} = 0.76$
3030	$= \frac{4.5 \times 30.5}{0.83 \times 0.67^2} = 368$	$\rho = \frac{13.6 \times 7.5}{126.0 + 7.5} = 0.76$
WAXY	$= \frac{4.5 \times 30.5}{0.85 \times 0.693^2} = 336$	$\rho = \frac{13.6 \times 8.0}{134.0 + 8.0} = 0.77$

2017

131D →	53.6		53.6		53.6		53.6	
x1790 →	4.5	58.1	4.5	58.1	4.5	58.1	4.5	58.1
x3562 →	26.8	84.9	26.8	84.9	26.8	84.9	26.8	84.9
74C →	4.5	89.4	4.5	89.4	4.5	89.4	4.5	89.4
177A →	1.2	90.6	1.2	90.6	—	—	—	—
x3579 →	4.5	95.1	x3578 4.5	95.1	5.7	95.1	4.5	93.9
x3584 →	2.2	97.3	2.2	97.3	2.2	97.3	2.2	96.1
x3588 →	0.7	98.0	0.7	98.0	0.7	98.0	0.7	96.8
265A →	1.0	99.0	1.0	99.0	1.0	99.0	1.0	97.8
319 →	1.0	100.0	1.0	100.0	1.0	100.0	1.0	98.8
sol. D.D →	0.1	100.1	0.1	100.1	0.1	100.1	0.1	98.9

120 g

36 g | H_2O

84 g | solid mat.

4 g starch

1 g

1 : 9
s : H_2O

(5)

Fe-187 → $\frac{4.5 \times 33.0}{0.85 \times 0.613^2} = 465.0$

3095 → $\frac{4.5 \times 29.5}{0.735 \times 0.61^2} = 485$

2020 → $\frac{4.5 \times 43.8}{0.865 \times 0.615^2} = 578$

WAXY → $\frac{4.5 \times 32.5}{0.835 \times 0.66^2} = 402$

$\rho = \frac{13.6 \times 7.8}{133.0 + 7.8} = 0.7$

$\rho = \frac{13.6 \times 8.2}{136.0 + 8.2}$

$\rho = \frac{13.6 \times 6.5}{109.0 + 6.5}$

$\rho = \frac{13.6 \times 6.9}{118.0 + 6.9}$

(6)

Fe 187 15 $= \frac{4.5 \times 45.5}{0.91 \times 0.62^2} = 585$

10 $= \frac{4.5 \times 38.5}{0.825 \times 0.615^2} = 555$

5 $= \frac{4.5 \times 35.5}{0.85 \times 0.605^2} = 513$

$\rho = \frac{13.6 \times 7.3}{127.0 + 7.3} = 0.74$

$\rho = \frac{13.6 \times 6.8}{117.0 + 6.8}$

$\rho = \frac{13.6 \times 6.8}{115.0 + 6.8}$

3095 15 $= \frac{4.5 \times 35.5}{0.83 \times 0.64^2} = 470$

10 $= \frac{4.5 \times 41.5}{0.875 \times 0.61^2} = 574$

5 $= \frac{4.5 \times 40.5}{0.9 \times 0.63^2} = 510$

$\rho = \frac{13.6 \times 6.9}{117.0 + 6.9} = 0.76$

$\rho = \frac{13.6 \times 7.6}{132.0 + 7.6}$

$\rho = \frac{13.6 \times 7.6}{132.0 + 7.6}$

2020

③

F_4-184 → 90.9/123.2 = 26.22

3095 → 91.5/125.0 = 26.80

3030 → 88.0/120.0 = 26.67

Waxy → 90.5/123.5 = 26.12

④

F_4-184 →	89.2/124.6 =	28.41
3095 →	88.6/123.1	28.03
3030 →	88.7/122.6	27.65
Waxy →	89.4/125.2	28.59

①

F_4-184 → 88.4/120.6 = 26.70

3095 → 87.5/118.0 = 25.85

3030 → 88.0/120.0 = 26.67

Waxy → 88.0/120.0 = 26.67

②

F_4-185 15 → 88.4/122.0 = 27.54

10 → 88.0/123.9 = 28.46

5 → 88.2/129.0 = 31.63

3095 15 → 88.0/121.5 = 27.57

10 → 88.3/123.5 = 28.50

5 → 88.3/128.2 = 31.12

Project No. 14222 ? Date of Work: 11/05/74 Work Performed by: A. Lastiglia

Title or Purpose: Continued From:

We will try also the series #4, 5 and 6. The recipes are:

	(4)				(5)				15 sec. (6)		
131D	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6
X1790	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
X3562	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8
74C	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
177A	—	—	—	—	—	—	—	—	—	—	—
X3579	—	—	—	—	—	—	—	—	—	—	—
X3582	—	—	—	—	—	—	—	—	—	—	—
F_4-187	4.5	—	—	—	4.5	—	—	—	4.5	4.5	4.5
3095	—	4.5	—	—	—	4.5	—	—	—	—	—
3030	—	—	4.5	—	—	—	4.5	—	—	—	—
WAXY	—	—	—	4.5	—	—	—	4.5	—	—	—
X3584	2.2	2.2	2.2	2.2	—	—	—	—	—	—	—
Dextrin	—	—	—	—	2.2	2.2	2.2	2.2	2.2	2.2	2.2
X3588	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
265A	—	—	—	—	—	—	—	—	—	—	—
319	—	—	—	—	—	—	—	—	—	—	—
Lec. AD.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hydration	28.41	28.03	27.65	28.39	26.70	25.82	26.67	26.67	27.54	22.46	31.63
ρ =	0.74	0.76	0.76	0.77	0.75	0.77	0.77	0.75	0.74	0.75	0.76
Pk. Ht. =	441	506	368	336	465	485	578	402	585	555	513

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2022

Project No. | Date of Work: | Work Performed by:

Title or Purpose: | Continued From:

(6)

(illegible)	10	5
53.6	53.6	53.6
4.5	4.5	4.5
26.8	26.8	26.8
4.5	4.5	4.5
—	—	—
—	—	—
—	—	—
—	—	—
4.5	4.5	4.5
—	—	—
—	—	—
—	—	—
2.2	2.2	2.2
0.7	0.7	0.7
—	—	—
—	—	—
0.1	0.1	0.1
27.57	28.56	31.12
0.76	0.74	0.74
470	574	510

Continued To: | Disclosed To And Understood By Me:

Entered By: | Date:

Date: | Date:

2023

58

Project No. 14262 2 Date of Work: 11/07/74 Work Performed by: A. Santiglia

Title or Purpose: EP 5298 on #7 ring. Chicago Continued From:

Two batches were supervised on #7 ring machine in Chicago
The run was smooth and problem less.
J. Vrla said 9c (ninety) rings were packed and sent to
U.S.S. Lorain.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2024

EF5465A (1) (3) (2)

13D →	55.5	166.5				206
X1790 →	4.6	13.8	180.3			0.2
X3562 →	27.8	82.4	263.7			78.4
74C →	4.6	13.8	277.5	13.8		X1281
177A →	1.2	3.6	281.1	3.4		
X3579 →	3.5	10.5	291.6	27.9	10.5	274.2
X3584 →	1.9	5.7	297.3	3.6	16.2	280.4
X3	0.7	2.1		5.7		
Vol. 3D →	0.1	0.3		3.0		
X1281 →						
Allogen →					3.7	
	99.9	299.7				

settling rate	1 min	940/890	930/900	930/890
	5 —"—	940/830	930/840	940/840
	10 —"—	940/830	930/820	940/810
	15 —"—	940/830	930/800	940/790
		1½ 700	1½ 700	1½ 700
osterizing 25 min				
settling	1 min	0	0	0
	5 —"—	0	0	0
	10 —"—	0	floated	0
	15 —"—	0		0
	25 —	floated from the sed.		floated from the middle
		no foam on top	no foam on top	foam on top

2025

Project No. 14232 2 Date of Work: 11/08/74 Work Performed by: A. Santighian

Title or Purpose: ~~177A replaced by [illegible]~~ Continued From:

At D.J. having request: sol. DD as suspending agents vs. Airgen and x1281.
EP 5465A recipe was used in order to eliminate 265A and 313's interference.
300 grs samples were produced and sol. D.D. (prepared by R. Dzurit
Airgen and x1281 were used at the same concentration.
The results are:

		①	②	③
131D →	166.5	55.-		
x1790 →	13.8	4.6		
x3562 →	83.4	27.8		
74C →	13.8	4.6		
177A →	3.6	1.2		
x3579 →	10.5	3.5		
x3584 →	5.7	1.9		
x3588 →	2.1	0.7		
sol. DD →	0.3	0.1		
Airgen →	~~0.3~~		0.3	
x1281 →	~~0.3~~			0.3
settling rate:				
1 min		2.2%	3.23	5.32
5 "		8.79	9.68	10.64
10 "		13.19	11.83	13.87
15 "		20.88	13.92	15.96
1½ hrs after 25 mins		23.08	24.73	25.53
osterizing				
1 min		0	0	0
5 "		0	0	0
10 "		0	floated from the	0
15 "		0		0
Continued To 25 "		floated from the bottom no foam on top	bottom no foam on top	floated from the middle foam on top.

A very diluted sol. D.D. was prepared: 20% x3580
80% ISA. (isopropyl alcohol)
concentration then 20%
0.02% were used in EP 5465A
settling rate

1 min	3.33
5 "	12.22
10 "	16.67
15 "	20.00

Disclosed To And Understood By Me:

Entered By:

Date:

Date:

Date:

2026

Project No. 14222 ? Date of Work: 11/11/74 & 11/12/74 Work Performed by: A Santighian C. Bulay

Title or Purpose: Burn-out test on STALEY starches Continued From:

Oven temp. 300° C (≈ 580° F) 1 hr.
Not conclusive data were obtained.
The test was repeated being used two starches (F4-187 and 3095) into EP 5672 and EP 5765. On meantime the permeability was tested by C. Bulay.
The recipes are:

	1	2	3	4	5	6
131D →	53.6	55.5	53.6	53.6	55.5	55.5
x1790 →	4.5	4.6	4.5	4.5	4.6	4.6
x3562 →	26.8	27.8	26.8	26.8	27.8	27.8
74C →	4.5	4.6	4.5	4.5	4.6	4.6
177A →	1.2	1.2	—	—	—	—
x3579 →	4.5	3.5	~~4.5~~	—	—	—
F4-187 →	—	—	4.5	—	4.5	—
3095 →	—	—	—	4.5	—	4.5
x3584 →	2.2	1.9	~~[illegible]~~	—	—	—
Dextrin →	—	—	2.2	2.2	2.2	2.2
x3588 →	0.7	0.7	0.7	0.7	0.7	0.7
265A →	1.0	—	1.0	0.1	—	—
319 →	1.0	—	1.0	0.1	—	—
sol. DD →	0.1	0.1	0.1	0.1	0.1	0.1
ft	14	12	18.0	12.3	14	15
H_2O retention	29%	28%	31%	30%	29%	28%
perm AFS units	7.35	5.0	4.85	4.16	3.5	4.3
str. str.	468.7	443.0	486.2	592.8	435.9	457.4
550°F 15 min	133.9	141.0	90.0	122.2	83.2	104.1
30 min	102.3	98.7	94.6	128.1	81.2	59.8
45 min	73.6	102.0	116.8	111.7	71.2	108.3
60 min	115.2	67.9	83.3	101.5	99.2	106.0

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

FOSECO, INC.

REFERENCE NO. LABORATORY REPORT SAMPLE NO. IM-5733
CONTAINER

RAW MATERIAL QUALITY CONTROL

SAMPLE ORDER NO.
DATE RECEIVED 11/8/74
SAMPLE TYPE 40-0493 (Special)
DATE REPORTED
RM NO. X-3579
SOURCE National Starch & Chemical Corp.
TO: Arson Santiqhien (DJR)

Rush

DISTRIBUTION: F.E. A.C.L F.S.P. J.W.W. R.W.R. A.F.E. LAB.

CHEMICAL ANALYSIS			SIEVE ANALYSIS		
COMPONENT	SPECIFICATION	PERCENT	SCREEN	SPECIFICATION	PERCENT
PURITY					
MOISTURE					
LOSS ON IGNITION					
LOSS ON FUSION					
SOLUBILITY					
WEIGHT/GALLON					
DENSITY			PAN		
SPECIFIC GRAVITY °F			COMMENTS:		
BULK DENSITY			The viscosity is higher than		
APPEARANCE			our regular x3579 but		
SUPPLIER'S CERTIFICATION			it can be used.		
COLOR			It seems to be a good		
			replacement for x3579.		

PURCHASE ORDER NO.
DATE RECEIVED
WEIGHT

Yes.
SATISFACTORY

UNSATISFACTORY

ANALYST Arson Santiqhien
ANALYST
SIGNED BY

2028

Project No. 14242 2 Date of Work: 11/12/74 Work Performed by: A. Santiglian

Title or Purpose: M5733 replacement for x3579 Continued From:

A sample from National Starch & Chemical corp was sent in as a possible replacement for x3579.
The material M5733 was used into EP5872.
The average ~~out~~ transverse strength out from three samples is:

(1) $\frac{4.5 \times 29.5}{0.835 \times 0.645^2} = 382.1$

(2) $\frac{4.5 \times 30.5}{0.815 \times 0.6^2} = 467.8$

(A) 434.9

(3) $\frac{4.5 \times 30.5}{0.785 \times 0.62^2} = 454.8$

The liquid's viscosity is higher than our regular x3579 but it can be used.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14292 Date of Work: 11/15/74 Work Performed by: A Santighian

Title or Purpose: Starches and Dextrin into EP5297 Continued From:

	①		②	
131D	83.5	83.5	81.8	81.8
x1790	8.4	8.4	8.2	8.2
F4-187	1.7	—	3.3	—
3095	—	1.7	—	3.3
Dextrin	0.8	0.8	1.1	1.1
x3588	0.5	0.5	0.4	0.4
sol. DD	0.2	0.2	0.2	0.2
267	5.0	5.0	4.9	4.9
ft	9.5	7.5	8.0	5.9
Bo ret.	31.13	31.02	30.80	30.49
tr. str.	179.0	164.1	300.1	233.6
ρ	0.6519	0.7597	0.6686	0.7954

Four water levels were tried: 600 (① F4-187) 14.29%
500 (① 3095) 16.67%
400 (② F4-187) 20.00%
350 (② 3095) 22.22%

The best seems to be 350 ml.

The best starch seems to be F4-187 at 3.3% level and 1.1% Dextrin.
Probably a 10-20 gals batch for Smitec pads will be desirable.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14302 Date of Work: 11/18/74 Work Performed by: A Santighian

Title or Purpose: EP 5465 + 2% paper Continued From:

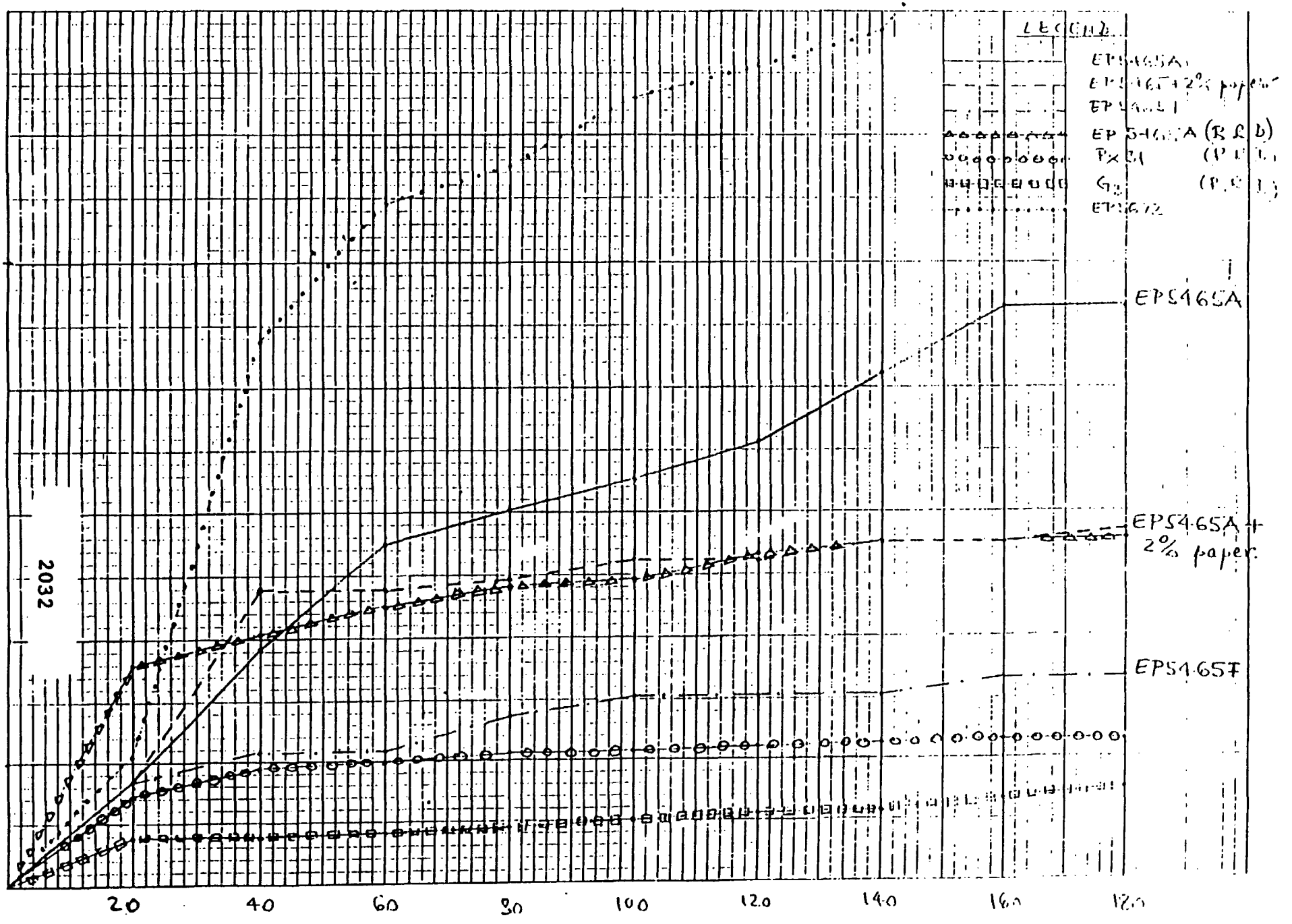
D. J. M. asked for 2% paper into EP 5465A type recipe

13 LD	600	53.62	53.6	160.9
x1730	50	4.47	4.5	13.4
x3562	300	26.81	26.8	80.4
74C	50	4.47	4.5	13.4
177A	13	1.16	1.2	3.5
x3579	50	4.47	4.5	13.4
x3584	25	2.23	2.2	6.7
x3588	8	0.71	0.7	2.1
sol. DD	1	0.09	0.1	0.3
267	22	1.97	2.0	5.9
	1119.0	100.00	100.1	300.0
ft → 10 sec. Dwt.			4.5	~~[illegible]~~
1 min			—	1%
5 min			—	4
10 min			—	6
15 min			—	8
1 hr			—	14
Hz retention			30.77	—
2 hrs.				16
Tr. str.			334.9	
ρ			0.7134	
4 hrs				17

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:


EPS465A
EPS465A + 2% paper
EPS465F
2032
20
40
60
80
100
120
140
160
180

Project No. 14302 Date of Work: 11/19/20/74 Work Performed by: P. Kuzmyn A. Laughton

Title or Purpose: Continued From:

Three 10 gals batches were produced for further tests on EP5465A, EP5465T and EP5465A +2% paper. The recipes and batch sizes were

	EP5465A		EP5465A +2% paper		EP5465T		EP5672	
131D	55.56	13.33	53.61	13.34	53.58	13.33	53.61	13.34
x1796	4.63	1.11	4.46	1.11	4.46	1.11	4.46	1.11
x3562	27.80	6.67	26.81	6.67	26.81	6.67	26.81	6.67
*74C	4.63	1.11	4.46	1.11	4.46	1.11	4.46	1.11
177A	1.21	0.29	1.17	0.29	1.17	0.29	1.17	0.29
x3579	3.50	0.84	4.46	1.11	3.38	0.84	4.46	1.11
x3584	1.83	0.44	2.25	0.56	1.77	0.44	2.25	0.56
x3588	0.75	0.18	0.72	0.18	0.72	0.18	0.72	0.18
inl.31	0.08	0.02	0.08	0.02	0.08	0.02	0.08	0.02
267	—	—	1.97	0.49	3.58	0.89	~~0.98~~	~~—~~
		23.99	~~2.88~~	24.88	—	24.88	~~0.98~~	—
265A							0.98	0.24
9319							0.98	0.25
Tr. Str.	290.0		294.8		378.2			
~~Screen~~	0.724		0.634		0.633			
0	9.125	0	9.125	0	9.125	0	9.125	0
20	8.750	4.11	8.750	4.11	8.750	4.11	7.750	5.07
40	8.250	9.59	8.125	11.96	8.625	5.48	7.125	21.92
60	7.875	13.70	8.125	11.96	8.625	5.48	6.625	27.40
80	7.750	15.07	8.000	12.33	8.500	6.85	6.500	28.77
100	7.625	16.44	7.938	13.01	8.438	7.53	6.250	31.51
120	7.500	17.81	7.938	13.01	8.438	7.53	6.125	32.88
140	7.250	20.55	7.875	13.70	8.438	7.53	6.000	34.25
160	7.000	23.29	7.875	13.70	8.375	8.22	5.875	35.62
180	7.000	23.29	7.813	14.38	8.375	8.22	5.875	35.62
Slump at batt.	4.5"		3.25"		2.25"		3.5"	

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14312 Date of Work: 11/25/26/74 Work Performed by: A. Sautighin, P. Kuzmyn

Title or Purpose: Density determination procedure Continued From:

At B. R. Durilla request we started on a "quick" industrial density determination procedure.
The idea was to find out the ways to determine the boards density by water immersion.
Using the procedure the boards absorbs water unevenly and the procedure is not reproduceable.
The following are the obtained figures:

(1) - The dry board weight : 10.17 lbs
- The wet board weight : 15.91 lbs.
- The volume of water displaced : 2 1/16"
- The gals level measurements : 4 gallons of water/9.5".
- # of gals of water per inch : 4 ÷ 9.5 = 0.421052 gals/in
- # of gals of water displaced : 2.0625 × 0.421052 = 0.868419 gals
- lbs of water displaced : 0.868419 × 8.337 = 7.240009 lbs.
- Density formula : $\frac{G}{V}$

(A) — $\frac{1\ g/cc \times 10.17\ lbs \times 453.592427\ g/lbs}{19.651492\ lbs \times 453.592427\ g/lbs} = \frac{10.71}{19.651492} = 0.517517\ g/cc$

(B) — $\frac{1\ g/cc \times 15.91\ lbs \times 453.592427\ g/lb}{19.651492\ lbs \times 453.592427\ g/lb} = \frac{15.91}{19.651492} = 0.809607\ g/cc$

Interpreting the above figure (The immersion was last for 3 (three) hours) we notice that the dry board's weight is not significant. Then other 3 (three) boards were tried. The figures are:

(2) - The wet board weight (3 hrs) : 14.2 lbs
- The volume of displaced water : 2" X 6"
- The weight of the displaced water : 2.6875 × 1.142857 × 8.337 = 25.606495
- The density : $\frac{14.2}{25.606495} = 0.554546\ g/cc.$

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. | Date of Work: | Work Performed by:

Title or Purpose: | Continued From:

③ 13.86 lbs ; 2.5"

$2.5 \times 1.142857 \times 8.337 = 23.819992$

$\frac{13.86}{23.819992} = 0.581864$ g/cc.

INCORRECT

④ 14.23 lbs ; $2\frac{3}{4} = 2.750$

$2.750 \times 1.142857 \times 8.337 = 26.201990$

$\frac{14.23}{26.201990} = 0.543058$ g/cc.

Conclusion:

The static figures obtained are caused by different water absorbtion capacity showed up by the boards.

That is probably due to the grain hardness and the edges. Probably a coating procedure must be worked out in order to rich the goal. Quick and reliable test.

Ⓐ $\frac{1 \times 10.17 \times 453.59237}{(7.240009 + 5.74) 453.59237} = \frac{10.17}{12.98} = 0.783513$ g/cc

Ⓑ $\frac{9.51}{9.02 + 3.44} = \frac{9.51}{12.46} = 0.763242$ g/cc

Ⓒ $\frac{10.05}{10.23 + 2.59} = \frac{10.05}{12.82} = 0.783931$ g/cc.

Ⓓ $\frac{9.93}{10.54 + 2.12} = \frac{9.93}{12.66} = 0.784360$ g/cc

Ⓔ $\frac{10.01}{9.80 + 2.38} = \frac{10.01}{12.18} = 0.821757$ g/cc

Ⓕ $\frac{9.92}{11.56} = 0.858131$ g/cc

Continued To: | Disclosed To And Understood By Me:

Entered By: | Date:

Date: | Date:

Project No. 24182 Date of Work: 11/26/74 Work Performed by: A. Santiglia

Title or Purpose: Asbestos free Kaluinex Continued From: 45

EP5269

13C →	2	× 18.00	=	0.3600
149R →	20	× 18.60	=	3.7200
175 →	8	× 5.97	=	0.4776
177A →	4	× 52.00	=	2.0800
W422 →	20	× 7.80	=	1.5600
447 →	4	× 28.60	=	1.1440
X3198 →	10	× 47.80	=	4.7800
267 →	3	× 3.50	=	0.1050
X3562 →	20	× 4.19	=	0.8380
X2789 →	9	× 9.19	=	0.8271
182 →	0.5	× 22.79	=	0.1140
	100.5			16.0057 ¢/lb.

422G →	56.82	× 3.25	=	1.846650
X3562 →	17.05	× 4.19	=	0.714395
13C →	4.55	× 18.00	=	0.819000
282D →	5.69	× 2.10	=	0.119490
177A →	1.48	× 52.00	=	0.769600
X3579 →	4.50	× 23.45	=	1.055250
X3584 →	2.28	× 13.93	=	0.317604
267 →	6.82	× 3.50	=	0.238700
182 →	0.80	× 22.79	=	0.182320
				6.063009 ¢/lb.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 24182 Date of Work: 11/27/74 Work Performed by: A. Santighian

Title or Purpose: Asbestos free Kalminex Continued From:

At D.J.M. suggestion x3562 has been replaced by x3198 The recipe is:

422G →	400	50.00	3.25	=	1.625000
13C →	40	5.00	18.00	=	0.900000
282D →	50	6.25	2.10	=	0.131250
177A →	13	1.62	52.00	=	0.842400
x3579 →	40	5.00	23.45	=	1.172500
x3584 →	20	2.50	13.93	=	0.348250
267 →	60	7.50	3.50	=	0.262500
182 →	7	0.88	22.79	=	0.200552
149R →	100	12.50	18.60	=	2.325000
x3198 →	70	8.75	47.80	=	4.182500
					11.989952

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14312 Date of Work: 11/27-29-30/74 Work Performed by: A. Santiglia

Title or Purpose: Density determination procedure Continued From: page 66.

A gross error was made in calculating the density through water immersion of the boards, the procedure was recevaluated and the followings are the obtained figures:

Board #① [edged board, cavity # 2]

	weight dry	weight wet	water Replaced lbs.	
ⓐ	10.15	13.31	9.18	$\frac{10.15}{9.18+3.16} = 0.822538$ g/cc.
ⓑ	10.06	13.14	9.27	$\frac{10.06}{9.27+3.08} = 0.814574$ g/cc
ⓒ	10.39	14.08	8.51	$\frac{10.39}{8.51+3.69} = 0.851639$ g/cc
ⓓ	10.05	14.00	8.44	$\frac{10.05}{8.44+3.95} = 0.811138$ g/cc

The average [simple] is: 0.824969 g/cc
341.107536 in³

Board #② [unedged board, cavity # 4]

ⓐ	10.42	14.09	9.01	$\frac{10.42}{9.01+3.67} = 0.821766$ g/cc
ⓑ	10.27	13.37	9.47	$\frac{10.27}{9.47+3.07} = 0.818979$ g/cc
ⓒ	10.57	14.40	8.73	$\frac{10.57}{8.73+3.83} = 0.841560$ g/cc
ⓓ	10.03	13.20	9.44	$\frac{10.03}{9.44+3.89} = 0.796108$ g/cc.

The simple average is: 0.819603 g/cc.
353.774475 in³

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14312 Date of Work: 12/02/74 Work Performed by: A. Santiphian

Title or Purpose: Continued From:

Board #3 [unledged board, cavity # 3]

a	10.26	13.22	9.56	$\frac{10.26}{9.56+2.96}$ = 0.819488 g/cc
b	10.06	11.38	10.47	$\frac{10.06}{10.47+1.32}$ = 0.853265 g/cc
c	10.11	12.94	9.62	$\frac{10.11}{9.62+2.23}$ = 0.812043 g/cc
d	10.39	14.15	8.99	$\frac{10.39}{8.99+3.76}$ = 0.814901 g/cc
e	10.03	13.20	9.44	$\frac{10.03}{9.44+3.07}$ = 0.801758 g/cc

The simple average is: 0.820292 g/cc
342.699555 in^3

Board #4 [ledged board, cavity # 1]

a	9.50	13.39	7.24	$\frac{9.50}{7.24+3.89}$ = 0.853848 g/cc
b	9.57	13.91	8.00	$\frac{9.57}{8.00+4.34}$ = 0.775526 g/cc
c	9.50	13.93	7.98	$\frac{9.50}{7.98+4.43}$ = 0.765511 g/cc

The simple average is: 0.798295 g/cc
332.985909 in^3

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

R. R. Izquierdo

Project No. 14312 Date of Work: 12/02-03/74 Work Performed by: A. Lautigliaro

Title or Purpose: Continued From:

At R.R. Izquierdo request we start using the first weight of the board into all further tests:

(1)	(a)	9.75	13.45	8.58	$\frac{9.75}{8.58+3.70} = 0.793973$
			$340.000044\ in^3$		
	(b)	10.10	14.35	7.73	$\frac{10.10}{7.73+4.25} = 0.843071$
			$331.693854\ in^3$		
	(a)(b)	9.75	14.35	7.73	$\frac{9.75}{7.73+4.60} = 0.790752$
			$335.846949\ in^3$		
	(c)	9.75	14.43	7.28	$\frac{9.75}{7.28+4.68} = 0.815217$
			$331.693854\ in^3$		
			av. $335.846949\ in^3$		$0.799981\ g/cc$
(2)	(a)	9.62	12.65	9.13	$\frac{9.62}{9.13+3.03} = 0.791118$
			$336.677568\ in^3$		
	(b)	9.74	14.00	7.87	$\frac{9.74}{7.87+4.26} = 0.802968$
			$335.846949\ in^3$		
	(a)(b)	9.62	14.00	7.87	$\frac{9.62}{7.87+4.32} = 0.785306$
			$339.169425\ in^3$		
			av. $337.923497\ in^3$		$0.788212\ g/cc$
(3)	(a)	9.85	13.20	8.83	$\frac{9.85}{8.83+3.35} = 0.808702$
			$337.231314\ in^3$		
	(b)	9.94	13.71	8.73	$\frac{9.94}{8.73+3.77} = 0.795200$
			$346.091250\ in^3$		
	(a)(b)	9.85	13.71	8.73	$\frac{9.85}{8.73+3.86} = 0.782367$
			$348.583107\ in^3$		

Continued To: av. 342.907211 Disclosed To And Understood By Me: 0.795735

Entered By: Date:

Date: Date:

R.R. Dzurilla

Project No. 14312 Date of Work: Work Performed by: A. Santiglia

Title or Purpose: Continued From:

(4) (a) 9.50 13.10 9.38 $\frac{9.50}{9.38 + 3.60} = 0.731895$

359.381154 in^3

(b) 9.94 13.30 9.05 $\frac{9.94}{9.05 + 3.36} = 0.800967$

343.599393 in^3

(ab) 9.50 13.30 9.05 $\frac{9.50}{9.05 + 3.20} = 0.739300$

355.781805 in^3

av. 357.581480 in^3 0.735589 g/cc.

R.R.D wants more boards to be tested.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14262 Date of Work: 12/05/74 Work Performed by: A. Santighisu

Title or Purpose: Asbestos free trial in Chicago Continued From:

EP5672P (EP5465A + 2% paper) has been scheduled on super G. 2½ batches were produced without supervision. 1½ batches were supervised. The run was a failure. Dewatering process was very long and inefficient. The diafragm (valve) was change but the pieces cannot be dewater. The trial was stoped after 10 cycles.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14302 Date of Work: 12/09/74 Work Performed by: A. Santighian

Title or Purpose: Starch in EP 5672 P Continued From:

	(1)	(2)	(3)
1311 →	54.25	54.25	54.25
×1790 →	4.52	4.52	4.52
×3562 →	27.13	27.13	27.13
74C →	4.52	4.52	4.52
F_4-187 →	4.52	—	4.52
3095 →	—	4.52	—
×3584 →	2.26	2.26	—
Dextrin →	—	—	2.26
×3588 →	0.72	0.72	0.72
Hol. DD →	0.09	0.09	0.09
267 →	1.99	1.99	1.99
ft_1 →	5.0	5.2	5.1
ft_2 →	6.6	5.6	4.9
ft_3 →	5.4	5.6	6.3
H_2O retention,	127.9/92.2	127.3/91.9	128.8/92.5
%	27.91	27.81	28.18
H_2O retention$_2$	128.4/92.3	127.8/91.1	129.4/91.8
%	28.12	28.72	29.06
H_2O retention	129.2/92.5	128.7/92.0	131.2/93.3
%	28.41	28.52	28.89
ft. strength,	369.17	329.00	483.72
ft. strength$_2$	324.49	271.08	412.17
ft. strength$_3$	403.10	244.94	408.26
av.	365.59	281.67	434.72

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14322 Date of Work: 12/10/74 Work Performed by: A. Santighian R.R. Izurilla

Title or Purpose: Rayon & Polyester fibers for Plx. Continued From:

At R.R. Izurilla suggestion we started looking for Polyester fibers (100% Polyester staple, Fiber 200 Type 103 semi dull)

The Polyester fiber has been used in EP 5298 Plx recipe.

	1	2	3	4
13D	50.30	50.30	50.30	50.30
x2286	25.10	25.10	25.10	25.10
x3562	12.60	12.60	12.60	12.60
177A	1.50	1.50	1.50	1.50
x3588	2.50	6.00	2.00	2.00
sol. DD.	0.50	0.50	0.27	0.27
267	4.00	1.50	1.00	2.00
528	3.50	2.50	0.50	0.50
lumpy unworkable		lumpy	bad suspension	very good.
suspension 1 min			9%	3%
5 min			22%	3%
ft.			5.1 sec	5.5 sec.
Surface			acceptable	good
tr. str.			41.83	28.82
ρ			0.56	0.51
shrinkage at ?°C.			good	good
burn out Test			good	good

The test was repeated during 12/11 and 12/12/74. Also with RRD we tried to disperse Rayon fibers (two samples received). No one works acceptable. They are not dispersable in our Osterizer. R.R.D asked for Price. Polyester is ~~[illegible]~~ 63 ¢/lb.
The Polyester fiber ~~stays~~ withstand at 500°F. At 600°F melts.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2045

Project No. 14322 Date of Work: 12/13/74 Work Performed by: R.B. Douglas A. Santiglian

Title or Purpose: Continued From:

131D	50.3	50.3	50.3	50.3
x2286	25.1	25.1	25.1	25.1
x3562	12.6	12.6	—	—
172A	1.5	2.0	2.0	2.0
x3588	2.0	2.0	2.0	—
Polyester	1.0	1.0	1.0	1.5
Tol. DD	0.27	0.18	0.5	0.5
subjunction	0%	3.6%		
	0%	7.1%		
	0%	10.1%		
ft	25 sec	4.4		
sl wt	60 sec	10.0		
surface	accept.	accept.		
segregation during forming	yes	yes		

The material is too fluffy, too dusty, is not acceptable.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14332 Date of Work: 12/16/74 Work Performed by: A. Santighian

Title or Purpose: Continued From:

	1	2	3	4	5	6	7
131D →	42.9	42.9	42.9	42.9	36.9	30.5	38.7
x2286 →	16.1	16.1	16.1	16.1	23.1	25.4	14.5
x3562 →	16.1	16.1	16.1	16.1	23.1	25.4	24.2
74C →	10.7	10.7	10.7	5.4	4.6	5.1	9.7
177A →	1.4	1.4	1.4	1.4	1.2	1.3	1.3
x3579 →	5.4	5.4	5.4	5.4	4.6	5.1	4.8
x3584 →	2.7	2.7	2.7	2.7	2.3	2.5	2.4
x3588 →	4.3	4.3	4.3	4.3	3.7	4.1	3.9
sol DD →	0.5	0.3	0.1	0.1	0.1	0.1	0.3
ft →	139 sec	30	18	24	24	15	38
suspension	1	0	0	0	0	0	0
	5	0	0	0	0	0	0
	10	0	0	0	0	0	0
trans. str						38.01	
ρ						0.49	

A 20 gal. batch will be made for Smitec test and surface appearance. XS1610 #6

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14262 Date of Work: 12/18/74 Work Performed by: A. Santiglia

Title or Purpose: Asbestos free trial in Chicago Continued From:

EP5672P (EP 5465 +2% paper) was used on Super G printing 376 boards for U.S.S ~~Steel~~ Corp.

5 batches were produced and the run was smooth and no technical problems occurred. At Joe Vrh suggestion 5 gallons of antifoam were used into recirculating water.

Obviously the foam is generated primarily by X3579. Probably replacing X3579 by X3578 + Dextrin will do the job better.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 13012 Date of Work: 12/17/74 Work Performed by: A. Dantighian

Title or Purpose: Cement for SiC. Inserts. Continued From:

The following suggestions were made:

(1) SiC → 75%
Kaolin → 5% [1700°C]
MgO → 15%
Frit → 5% [1350°C]

(2) SiC → 75%
Kaolin → 5%
graphite → 15%
Frit → 5%

(3) SiC insert must be layed down on a paste bed.

(4) The usage of cement as less as possible on top of the insert.

(5) coating for SiC insert. [radonina]

(6) Avoiding sharp edges at the tool in order to prevent fire cracks.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14332 Date of Work: 12/20/74 Work Performed by: P. Kuzmyn, C. Bulan, A Santighian

Title or Purpose: Continued From:

A 20 gals batch on # 6 recipe from page 78

XS 1610

131 D → 12.00

x2286 → 10.00

x3562 → 10.00

74C → 2.00

177A → 0.52

x3579 → 2.00

x3584 → 1.00

x3588 → 1.60

sol. DD → 0.40

39.52

ρ = 0.5152 g/cc

Tr. strength = 89.66 p.s.i.

$\boxed{\text{XS 1610}}$

final rate : 6800 Btu/ft² hr 3/4"

rate/min : 117.3 Btu/min

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14342 Date of Work: 01/17/75 Work Performed by: A Lautifistan

Title or Purpose: TM 5777 (replacement for 177A) was Continued From: Pacific Resinse & Chemicals (1508C)

TM 5777 was used as direct replacement for 177A and/or PVAc. The recipe which was used was GP 56727 and TM 5777 was used at 4.56.

The transverse strength was for 3 (three) samples as follow:

(1) 52.6 p.s.i

(2) 58.2 p.s.i

(3) 47.6 p.s.i.

The required transverse strength must be at least 200 p.s.i.

Therefore the TM 5777 is not acceptable.

01/20/75

The test was repeated using twice the amount the recipe was:

131b →	53.6
x1790 →	4.5
x3562 →	26.8
74C →	4.5
1508C →	9.0
x3584 →	2.2
x3588 →	0.7
vl DJ →	0.1
267 →	2.0

Three pads were pushed and the results are:

(1) 35.64 p.s.i BF=

(2) 39.52 —"—

(3) 24.75 —"—

Heavy foam was encountered during pads pressing time. Probably the resin migrate to the surface

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14352 Date of Work: 01/17/75 Work Performed by: A. Santhiran

Title or Purpose: M5758 (replacement for 177A) made from American Cyanamid (AR 700 UK-A)

M5758 was used as direct replacement for 177A and/or PVAc. M5758 was used into EP5672P at 4.5% level.

The results are:

(1) 24.48 p.s.i

(2) 19.65 p.s.i

(3) 29.62 p.s.i.

The M5758 is not acceptable.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14262 Date of Work: 01/13 – 16/75 Work Performed by: A. Santiffi

Title or Purpose: Asbestos free Trials in Chicago Continued From:

① On #7 ring machine EP 5298 was used for 2 shifts. The run was smooth. Trouble ~~[illegible]~~ free ~~[illegible]~~ were 360 rings on the machine, were packed 325 (6 ~~[illegible]~~% scrap) 11 pallets.

② On Super G, EP5672P being used for 2 shifts also. The run was smooth. Dewatering time was 20-25 sec higher than standard. The surface rougher.

Both products (rings and boards) were shipped to Lorain.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14362 Date of Work: 02/05/75 Work Performed by: A. [illegible]

Title or Purpose: Plx. asbestos free, +3198 & 267 Continued From:

131D →	200	45.7	
x2286 →	100	22.8	68.5
x3562 →	50	11.4	79.9
177A →	6	1.4	81.3
x3588 →	24	5.5	86.8
267 →	16	3.6	—
x3198 →	40	9.1	95.9
sol. DD →	2	0.5	
	438		

14362 - 14372 - 14382 were initiated by D.J. Marino in order to start using x3198 to improve the insulating properties.

settling	1	935/930	+0.57
	5	935/930	0.57
	10	935/925	1.07
	15 mins.	935 925	1.07
ft		4.2 sec.	
H_2O retention		148.8/92.4	
ρ		0.48 g/cc	
tr. str.		47.1 p.s.i.	

~~(600 × 8.3375) + 438 =~~

~~$\frac{438}{14405}$ = 8.05 / 8.71 / 9.51 %~~

8.06%

10.00%

$\frac{100}{x}$ = 8.05

$\frac{10.0}{8.05}$ = 1242 ml.

make volume determination for each recipe.

x51617

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14372 Date of Work: 02/05/75 Work Performed by: A. [illegible]

Title or Purpose: Plx 265 & x3562 free + 3198 Continued From:

131D →	200	53.9	
x2286 →	100	26.9	80.8
177A →	6	1.6	82.4
x3588 →	24	6.5	88.9
x3198 →	40	10.8	99.7
sol. DD →	1	0.3	100.0
	371		

settling	1	660/640	3.08
	5	660/630	4.54
	10	660/610	7.57
	15 mins	660/610	7.57
ft		2.8	
H_2O retention		116.6/93.4	
g		0.46 g/cc	
tr. str.		34.6 p.s.i.	

(600 x 8.3375) + 371

$\frac{371}{5373.5}$ = 6.9% (6.88%)

$\frac{100}{880}$ = 11.36

$\frac{100}{6.9}$ = 1449 ml.

xS 1618

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14382 Date of Work: 02/05/75 Work Performed by: A. Santos

Title or Purpose: Plx 265 & 2562 free + 3198 & 267 Continued From:

13D →	200	51.68	51.7	
x2286 →	100	25.84	25.8	77.5
177A →	6	1.55	1.6	79.1
x3588 →	24	6.20	6.2	85.3
x3198 →	40	10.34	10.3	95.6
267 →	16	4.13	4.1	99.7
sol. 2D →	1	0.26	0.3	100.0
	387			

(600 x 8.3375) + 387

$\frac{387}{5389.5} = 7.18\%$ (7.44%)

$\frac{100}{930} = 10.75$

$\frac{100}{7.18} = 1393$ ml.

settling	1	820/820
	5	820/810
	10	820/800
	15 mins.	820/800

ft 4.3

H_2O retention 154.7/100.2

g = 0.44 g/cc

tr. str. 43.0 p.s.i.

XS 1619

Continued To:

Disclosed To And Understood By Me:

Entered By:

Date:

Date:

Date:

Project No. 14362 – 14372 – Date of Work: 02/06/75 Work Performed by: C. Bulau & A. Santiglian

Title or Purpose: 14382 Continued From:

	14362	14372	14382
XS1617	(1)	XS1618 (2)	XS1619 (3)
131D →	6.67	6.67	6.67
X2286 →	3.33	3.33	3.33
X3562 →	1.67	—	—
177A →	0.20	0.20	0.20
X3588 →	0.80	0.80	0.80
X3198 →	1.33	1.33	1.33
267 →	0.53	—	0.53
sol. DD →	0.03	0.03	0.03
Tr. str.	44.0	34.0	23.0
ρ	0.39	0.39	0.42
final rate:	7805	7141	7456
rate/min:	134	127	126
	slagged	severe slagging	2
			− 8093 / 140 } 460 corrugated (0.39 g/cc)
			− 7459 / 120 } 476 bark in (0.47 g/cc)

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14392 Date of Work: 02/07/75 Work Performed by: A. Lautigman

Title or Purpose: M 5776 replacement for 1774 Continued From:

EP 5672P recipe was used.

The results are:. Hotaq M 89 and M 128 antifoams have been used with good results.

The transverse strength was.

(1) 367 p.s.i.
(2) 292 p.s.i.
(3) 379 p.s.i.

The material is acceptable

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14392 Date of Work: 02/10/75 Work Performed by: A. Sauter

Title or Purpose: Continued From: page 89.

	(1)	(2)	(3)	(4)
131D →	52.9	52.9	54.3	54.3
x1790 →	4.4	4.4	4.5	4.5
x3562 →	26.5	26.5	27.1	27.1
74C →	4.4	4.4	4.5	4.5
177A →	1.2	—	3.2	—
M5776 →	—	1.2	—	3.2
x3579 →	4.4	4.4	—	—
x3584 →	3.5	3.5	3.6	3.6
X3588 →	0.7	0.7	0.7	0.7
5C.DD →	0.1	0.1	0.1	0.1
267 →	1.9	1.9	2.0	2.0
Fr. Jct.	223.0	310	298	278
	272.0	248	333	272
	268.0	360	327	314
	294.0	—	—	—
average:	264.25	306	319	288

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14402 Date of Work: 02/11/75 Work Performed by: A. Lantighia

Title or Purpose: The usage of kerosene in EP5672P Continued From:

Three levels of RM 245 were checked in EP5672P: 0.5%; 0.25% and 0.125%

The form times were improved from 15-20 sec/100 gr material to 10.5 sec.

At 600°F the material loss was, after 1 hr:

0.5% → 4.31%

0.25% → 4.42% The average: 4.72%

0.125% → 4.86% The standard deviation: ± 0.3833

0.0% → 5.29%

~~The test must be repeated~~

RM 245 has an adverse effect on suspension:

0.5% :	1 min → 7.7%	0.25%	1 min 6.9%	0.125%	1 2.0
	5 — → 26.13%		5 — 17.24		5 8.3
	10 —		10 — 24.14		10 12.5
	15 —		15 —		15 14.47

0.0%: 1 min → 0%

5 — → 4.26%

The test must be repeated.

0.5%: 4.72% loss at 600°F 1 hr.		31.25%
0.25%: 4.77%	— — — —	30.69
0.125%: 4.79%	— — — —	30.82
0.062%: 4.55%	— — — —	32.81
0.031%: 4.39%	— — — —	31.66
0.016%: 4.83%	— — — —	31.44
0.0 %: 5.11 %	— — — —	32.58
average: 4.74% ± 0.1625		31.56 ± 0.7768

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 1442 Date of Work: 02/13/75 Work Performed by: A. Sautighian

Title or Purpose: Ferro Engineering's ring Continued From:

The recipe was analysed by F.I.L and given to me by D.J.M.

131D → 88.5
×1790 → 5.0
×3562 → 10.0
177A → 3.5
546 → 10.0
267 → 3.0
100.0

Settling rate: 9 min : 445/415 = 13%
445/370 ≅ 16.5%
445/360 ≅ 18.2%

ft : 2.5 sec
p.d : 30-23 p.s.i
H_2O ret : 130.5/91.1 ≅ 31.0%

tr.str : 141.71 p.s.i
g : 0.60 g/cc

loss at 600°F : 30.7/28.6 = 7%

Shrinkage 1400° C: ① 2%
② 6.3%
③ 3.0%
Av.: 4.93%.

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

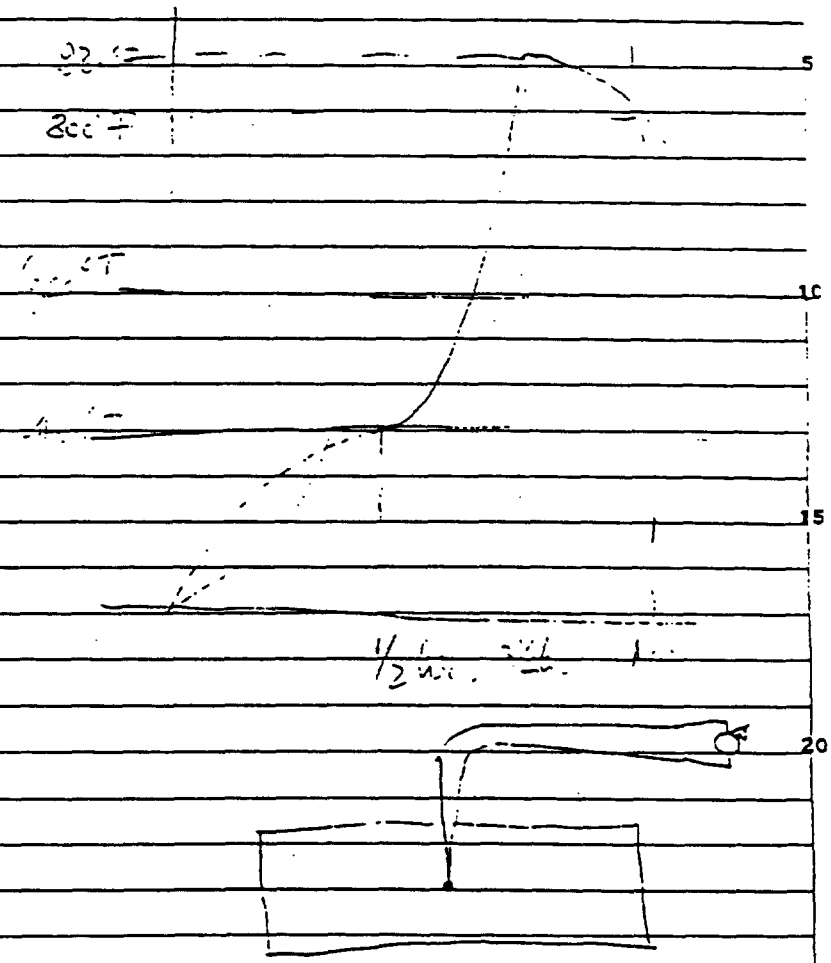
Date: Date:

Project No. 14422 Date of Work: 02/13/75 Work Performed by: A. Santi

Title or Purpose: EP4651B Marino replaced 265A & 319 by 267. Continued From:

At R.R. Dz. suggestion D.J. Marino approved the project:

131D → 42.3
×2286 → 26.4
177A → 1.0
×3588 → 2.3
×3198 → 1.9
546 → 14.8
267 → 10.8
tol.DD → 0.5



settling rate : very good.
ft : 10.9 sec.
p.i : 30-26 p.s.i.
H_2O net : 165.8/36.4 = 44.0%
fr.str : 40.0 p.s.i.
g : 0.44 g/cc.
loss at 600°F : 23.3/20.6 = 11.59%
shrinkage at 1400°F : ① 26.84%
② 27.68%
③ 42.04%
av. : 38.92%

Continued To:

Disclosed To And Understood By Me:

Entered By:

Date:

Date:

Date:

Project No. 14412 Date of Work: 02/14/75 Work Performed by: A. Santos

Title or Purpose: Continued From: page 92.

131D → 68.5	Different sol. DD levels were tried:
x2286 → 5.0	The best, from the suspension standpoint is 0.4%
546 → 20.0	The settling rate is:
177A → 3.5	1 min: 675/660 ≅ 2.0%
267 → 3.0	5 min: 675/640 ≅ 5.1%
100.0	10 min: 675/620 ≅ 8.0%
	15 min: 675/610 = 9.5%

settling rate: 02/17/75 1 min: 640/640 = 0%
5 — : 640/610 ≈ 5.0%
10 — : 640/600 ≈ 6.2%
15 : 640/600 ≡ 6.2%

form time: 2.5 sec.

pressure drop: 30-22 p.s.i.

XS1620
Rino [illegible]

H2O attention:

Tr. str. : 93.74

ρ. : 0.5948

shrinkage
@ 1400°C

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14432 (14442) Date of Work: 02/18-20/75 Work Performed by:

Title or Purpose: Continued From:

EP-298 (4% 267) was tried at 400°F from 3:00 p.m until 8:00 a.m. No change in color occurred. Thus every two hours the Temp. was increased by 25°F. On 02/20/75 at 600°F after 2 (two) hrs. because the the pads' colors was not changed, the four pads were weighed and found the paper is gone. Therefore, I tried a new pad after weighing, at 400°F for 1 hr. No change in weight was occurred.

02/21/75

425°F	51.4/51.1	(0.58%)	1 hrs.	550°F 51.8/50.25
450°F	51.1/51.1	(0.0%)	1 hr	3.06%
475°F	51.1/51.0	(0.09%)	1 hr	1 hr.
500°F	51.0/50.6	(0.78%)	1 hr	
525°F	50.6/50.4	(0.39%)	1 hr	
550°F	50.4/50.1	(0.59%)	1 hr.	

02/24/75

400°F	50.8/49.91	(0.34%)	2 hrs	
425°F	40.87/40.72	(0.36%)	2 hrs.	40.87/40.27 → 1.46%
450°F	40.72/40.56	(0.39%)	2 hrs.	
475°F	40.56/40.27	(0.71%)	2 hrs.	

02/25/75

450°F	40.18/39.82	(0.9%)	3 hrs.	(40.18/39.00 = 2.94%)

02/26/75 The sample changed its weight during night.

500°F	39.00/	2 hrs.	
	8.97/8.77 = 2.23%	2 hrs.	(Ferro ring?)

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14452 Date of Work: 02/21/24/75 Work Performed by: A. Sastry

Title or Purpose: Melting points for Continued From:

x3562, 74C, 117, x2286 & x1790

1200°C	- x3562 → very good	- x2286 → very good
	- 74C → -"- -"-	- x1790 → very good
	- 117 → vitrified	
1250°C	- x3562 → very good	- x2286 → good
	- 74C → very good	- x1790 → very good
	- 117 → vitrified	
1300°C	- x3562 → good	- x2286 → acceptable
	- 74C → good	- x1790 → very good
	- 117 → melted	
1350°C	- x3562 → accept.	- x2286 → vitrified
	- 74C → good	- x1790 → very good
	- 117 → melted	
1400°C	- x3562 → melted	- x2286 → melted
	- 74C. → vitrified	- x1790 → very good
	- 117 → melted	
1450°C	- x3562 → melted	- x2286 → melted
	- 74C → vitrified	- x1790 → good
	- 117 → melted	
1500°C	- x3562 → melted	- x2286 → melted
	- 74C → vitrified	- x1790 → partially melted
	- 117 → melted	
1375°C	- x3562 → partially melted	
	- 74C → vitrified	
	- 117 → melted	
	- x2286 → vitrified.	

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14412 Date of Work: 02/25/75 Work Performed by: A. Santighian

Title or Purpose: Continued From: 94

131D →	68.5	
x2286 →	10.0	✓
546 →	10.0	✓
x3588 →	5.0	✓
177A →	3.5	✓
267 →	3.0	✓
	100.0	

The recipe was changed because it does not look like the Ferro ring's sample. The changes were made by replacing 20% of 546 with 10% 546 + 5% x2286 & 5% x3588

settling rate: 1 1.52%
5 3.79%
10 4.55%
15 —

a 20 gals batch must be made. The batch size is: (big, industrial batch)

form time: 3.7 sec
H_2O retention: 29.16%
pressure drop: 30-26 p.s.i.
ρ: 0.571 g/cc.
tr. str: 74.76 p.s.i.

1400°C shrinkage: 5.84-7.26% (av. 6.72%)

burn-out test:

131D →	600	65.50
x2286 →	100	10.92
546 →	105	11.46
x3588 →	45	4.91
177A →	35	3.82
267 →	30	3.28
sol. DD →	1	0.11
	916	100.00

XS - 1.625

131D →	600	65.07	6	3 ✓
x2286 →	100	10.85	2	1 ✓
546 →	105	11.39	2	1½ ? 2 ✓
x3588 →	45	4.88	45	23
177A →	35	3.80		18
267 →	30	3.25		15
x1281 →	5	0.54		3
245 →	2	0.22		1
	922	100.00		

The 20 gals batch will be:

131D →	20.00	65.51 ?
x2286 →	3.33	10.91
546 →	3.50	11.46
x3588 →	1.50	4.91
177A →	1.17	3.83 ?
267 →	1.00	3.28
sol. DD →	0.03	0.09 ?
	30.53	

— burn out test @ 500°F 2hrs: 6.55% 147.52 / 137.86

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

2066

Project No. 14412 Date of Work: 02/27/75 Work Performed by: A. Santos

Title or Purpose: Ferro ring. Continued From:

131D → 68.5	
x2286 → 10.0	
x3562 → 10.0	
177A → 3.5	
x3588 → 5.0	
267 → 3.0	
sol. DD → 0.1 ?	
100.0	

sett: 1 → 1.51%
5 → 4.54%
10 → 4.54%
15 → ? —

f.t → 2.7 sec.
H_2O net → 27.99%
p.d → 30 – 26 p.s.i.
g = 0.5951 g/cc
t.s = 192.66 p.s.i.
shrinkage
@ 1400°C av: 3.93%

loss @
500°F 2hrs: 2.83%

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14412 Date of Work: 02/28/75 Work Performed by: A. Santos

Title or Purpose: Plx. Px Continued From:

131D → 46.3	131D → 83.2
x2226 → 28.9	x1790 → 8.3
1774 → 1.2	1774 → 5.0
x3588 → 2.5	x3588 → 0.8
x3198 → 2.1	267 → 2.5
546 → 16.2	x1231 → 0.2
267 → 2.3	
x1231 → 0.5	
100.0	1 min 440/360
1 min 1.28	5 " 440/285
5 " 1.78	10 " 440/270
10 " 1.28	15 " 440/265
ft → 10.0	ft → 6.3
30 → 177.7/95.8 : 46.08%	p.l → 30-26 24.41
g = 0.425	120.0/90.7 1hr
t.s = 11.8	shrinkage @ 1400° C → 0.68 - 2.88 ow : 2.23%
shrinkage @ 1400°C :	loss @ 500°F 2hrs → 2.16%
26.05-40.04%	t.s → 353.55
ow : 38.12%	g = 0.86
loss @ 500°F 2hrs :	
2.57%	

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. 14412 Date of Work: 02/28/75 Work Performed by: A. Santos

Title or Purpose: Plx Px Continued From:

131D → 46.3	131D → 83.2
x2226 → 28.9	x1790 → 8.3
177A → 1.2	177A → 5.0
x3588 → 2.5	x3588 → 0.8
x3198 → 2.1	267 → 2.5
546 → 16.2	x1231 → 0.2
267 → 2.3	
x1231 → 0.5	
100.0	1 min 440/360
1 min 1.28	5 " 440/285
5 " 1.28	10 " 440/270
10 " 1.28	15 " 440/265
ft → 10.0	ft → 6.3
30 → 177.7/95.8 : 46.08%	p.l → 30-26 24.41
g = 0.425	120.0/90.7 1hr.
t.s = 11.8	shrinkage @ 1400° C → 0.68 - 2.88 ow. 2.23%
shrinkage @ 1400°C:	loss @ 500°F 2hrs → 2.16%
26.05-40.04%	t.s → 353.55
ow: 38.12%	g = 0.86
loss @ 500°F 2hrs:	
2.57%	

Continued To: Disclosed To And Understood By Me:

Entered By: Date:

Date: Date:

Project No. | Date of Work: | Work Performed by:

Title or Purpose: | Continued From:

Continued To: | Disclosed To And Understood By Me:

Entered By: | Date:

Date: | Date: