PLAINTIFF'S EXHIBIT
UC-145

TECHNICAL SERVICE REPORT

THE EVALUATION OF ASBESTOS T-135 AS A PARTIAL REPLACEMENT FOR TITANIUM DIOXIDE AND HI-SIL

for

Consolidated Papers, Inc.
Wisconsin Rapids, Wisconsin

September 9, 1968

by

G. L. Dickson

Group Manager - W. L. Carrick

Project No. 443-N11

October 1, 1968

UNION CARBIDE CORPORATION
Chemicals & Plastics
Research and Development Department
Niagara Falls, New York 14302

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SUBJECT

This report covers the initial evaluation of Asbestos T-135 as a partial replacement for titanium dioxide and Hi-Sil (50/50 combination) by Consolidated Papers, Inc., Wisconsin Rapids, Wisconsin on September 9, 1968. The objective of this mill trial was to determine the compatibility of Asbestos T-135 in their system and its effects on production quality.

TRIAL RESULTS

Asbestos T-135 was evaluated on this mill's No. 11 machine during the production of 50-1/2 lb. coating-base stock. Approximately 2% T-135 was substituted for an equivalent amount of titanium dioxide and Hi-Sil for a period of three hours. During this time, no operational problems were encountered and production specifications were maintained. An increase in wire retention and lower saveall losses were observed while asbestos was present in the system. It is expected that an extended machine trial will be performed after their technical group has completed a test survey on converted production samples (coated and calendered).

DISCUSSION

As the primary objective of this machine trial was to evaluate the compatibility of Asbestos T-135 in their No. 11 machine system, no attempt was made at this time to determine the optimum amount of asbestos which can be used in their furnish. The trial consisted of substituting approximately 2% T-135 for the same amount of titanium dioxide-Hi-Sil combination, following an extended period during which time their normal furnish was utilized. Prior to the introduction of Asbestos T-135 into the machine chest, the addition of their normal opacifiers was discontinued. This was done so that the transition period between the pre-trial control and trial proper would be held to a minimum. Asbestos was then added as a slurry for a period of about 3 hours. Following the production of two reels of paper containing asbestos, which were to be used in part for testing, they again reverted to their normal furnish. No problems with machine operations were encountered during these times, and production quality, as reflected by the test results contained in Table II, was maintained.

A wet-end sampling program was carried out by their technical group during the trial and post trial period. These samples were subsequently analyzed by our Niagara Falls laboratory. The obtained analytical data and calculated retention values based on these results are presented in Tables I-III. Because of the paucity of samples, the data are not as informative as might be desired. The results indicate

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that during the trial tray water and saveall effluent solids decreased. This increase in retention is also borne out by the calculated retention figures presented in Table III. No explanation can be given for the increase in saveall influent solids during this time however, as it would seem that they should be lower because of the lower tray water solids.

One other inconsistency which is evident is the presence of 2.40% Asbestos T-135 in the "after refining" sample. The intended T-135 addition level was 2%, as this was the amount of TiO_2/Hi-Sil which was also removed from the furnish. By actual "bag count," the calculated addition level of T-135, based on their production rate, was equal to 1.9%.

CONCLUSIONS

The results of this trial demonstrated that Asbestos T-135 should be acceptable as a component in this mill's white paper furnishes. Providing their evaluation of coated and calendered samples is successful, it is recommended that a second trial be conducted so that more complete information regarding furnish savings and optimum pigment addition levels can be obtained. Our assistance in any way at that time has already been offered to their technical group.

G. L. Dickson/bsn

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TABLE I

Analyses of Wet-End Samples

	% Consistency	% Ash	% TiO_2	% Asbestos T-135
After Refining				
Trial	3.20	13.33	1.65	2.40
Control	3.36	12.82	2.45	0
Headbox				
Trial	0.775	20.71	2.69	2.96
Control	0.717	23.96	4.80	0
Tray Water				
Trial	0.267	48.70	6.16	6.70
Control	0.297	54.00	10.82	0
Saveall Influent				
Trial	0.154	66.54	12.23	4.31
Control	0.123	64.66	13.14	0.31
Saveall Effluent				
Trial	0.0035	25.38	5.97	3.30
Control	0.0049	38.33	9.68	1.79

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TABLE II

Analyses of Reel Samples

Reel No.	% Ash	% TiO_2	% Asbestos T-135	Bright.	Opacity
110904	13.68	1.68	0	85.6	92.2
110906 (Transition)	9.91	1.42	0	85.6	91.3
Average	11.80	1.55	0	85.6	91.8
110907	12.42	1.28	1.97	85.2	93.5
110908	12.46	1.11	2.28	85.6	93.5
110909	12.09	1.10	2.16	84.9	93.0
110910	11.60	1.12	1.79	85.2	92.0
Average	12.14	1.15	2.05	85.2	93.0

TABLE III

Calculated Retention

I Single Pass: $1-(Conc_{Tray}/Conc_{Headbox}) \times 100$

	% Ash	% TiO_2	% Asbestos T-135
Trial	18.8	21.1	22.0
Control	6.6	6.6	-

II Saveall Efficiency: $1(Conc_{Effluent}/Conc_{Influent}) \times 100$

	% Total Solids	% Ash	% TiO_2	% Asbestos T-135
Trial	97.7	99.1	98.1	98.3
Control	96.0	97.6	97.1	-

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UNION CARBIDE CORPORATION
MINING & METALS DIVISION
MILL TRIAL DATA SHEET

I. COMPANY LOCATION AND DATE OF TRIAL Consolidated Papers Inc., Wisc. Rapids, Wisc. September 9, 1968

II. COMPANY REPRESENTATIVES AND TITLES
Rich Wilhelm: Process Engineer

III. UCC REPRESENTATIVES B. K. Barton & G. L. Dickson

IV. TRIAL OBJECTIVES (In order of importance) Evaluation of Asbestos T-135 as a replacement for TiO_2/Hi-Sil combination (50/50)

V. PRODUCT IDENTIFICATION

Type of Product Coating Base Stock Coated Yes/~~No~~

Grade Name Sheet offset

Basis Weight 50-1/2 lb. (25x38-500)

Daily Production 80 tons Lb./hour 6,700

Total Daily Production of Mill 350 tons

(Tissue and Board) No. of Plys -

VI. MACHINE DESCRIPTION

:ria.

Type of Machine Fourdrinier, pressurized headbox, Dandy roll

Machine No. 11 (Cylinder) No. of Cylinders --

Machine Speed 700 FPM (Tissue) Reel Speed --

(Tissue) % Crepe -- Wire Mesh --

Wire Width -- Machine Trim --

Size Press Horizontal Calenders Single

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Mr. B. K. Barton (4)
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October 2, 1968

See Attached Distribution

Consolidated Papers, Inc.
Wisconsin Rapids, Wisc.
Asbestos T-135 Mill Trial

The attached report contains the results of the T-135 evaluation at Consolidated Papers on September 9. As of this time, we have received no word from them regarding the outcome of their test program on coated samples made from paper produced during the trial. If these results are favorable, it should be expected that they will make a more extensive run with T-135 in the near future. Although we offered our assistance in such a case, it may not be necessary for us to attend as Rich Wilhelm should be able to operate the repulper himself.

Also, even though the main interest of this trial was to determine the compatibility of T-135 in their system and to check its effect on machine production, it should be worth while discussing with them the increase in retention which resulted. We did not get a great deal of information on this, but the indications are that wire retention and saveall efficiency were greatly improved.

Gordon L. Dickson

GLD/bsn
Attach.

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